



UNIVERSITY
OF TASMANIA

Through the Rainbow Looking Glass: Exploration of the Impact of Gay
Community and Media Exposure on Body Image, Depression and Controlling
Physical Appearance in Gay Men

by

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Declaration:

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Signed:

Michael Adams

Date:

Acknowledgements

I would like to dedicate this thesis to my parents Beverly and Roger who have always supported me without question, understanding the importance of education. I would like to thank my supervisors Associate Professor Jenn Scott and Dr. Raimondo Bruno for their guidance. Finally, I would like to thank those who participated in this research.

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Abstract

Results from the literature have shown that gay men report greater susceptibility to appearance manipulation. There is a paucity of research examining factors that influence body image perception for gay men and that exposure to idealised media imagery may play a role in decreased satisfaction with appearance. The current study aimed to explore the relationships between gay identity variables (gay community involvement, gay media exposure, muscular/weight concerns) and body modification behaviours (eating restriction and obligatory/excessive exercise) and depression in a sample of 260 gay men recruited from Australian, American and British gay organisations or interest groups. The study utilised the The Multidimensional Body-Self Relations Questionnaire – Appearance Scales, Masculine Body Ideal Distress Scale, Eating Disorder Examination Questionnaire, Obligatory Exercise Questionnaire, K10, and experimenter derived Identification and Involvement with the Gay Community Scale. Using a path model between these variables, results showed strong and moderate effects between overweight preoccupation and restricted eating ($\beta = .70$) and muscular dissatisfaction and obligatory exercise ($\beta = .47$). A small significant effect was found between gay media exposure and overweight preoccupation ($\beta = .17$), while involvement in the gay community was related to a significant decrease in depressive symptoms ($\beta = -.21$). Results suggest that greater exposure to gay community media may relate to concerns about being fat. Higher levels of weight and muscle dissatisfaction may also relate to eating pathology risk and pathological exercise in order to conform to an idealised body. This is the first study to examine trimness and muscularity alongside two modification behaviours in gay men. The results suggest that gay men's body image is related to their perceptions of both bodyweight and satisfaction with levels of muscle tone. Findings also suggest

involvement in the gay community is associated with reduced mood problems in gay men, though the mechanism for this is not clear. The clinical implications of the findings are that psychologists working with gay male clients who present with body image difficulties should be mindful that the relationship between exercise fixation and eating problems needs to be assessed. Future research should explore whether gay men from specific gay subcultures (which value different forms of appearance) are subject to similar forms of body manipulation.

Introduction

Body image is the physical manifestation of the inner self representing various characteristics of our personalities to the external world (Hägglund & Piha, 1980).

Body image and self-concept are closely related constructs as the body symbolically represents the *self* (O'Dea, 2012). Close relationships can shape both self-concept and body image, and interpersonal connections and interactions can, along with a secure sense of self, serve to psychologically protect a person against feelings of anxiety and depression about death (Florian, Mikulincer, & Hirschberger, 2002; Hart, Shaver, & Goldenberg, 2005).

Body Image Perceptions Among Women

There have been over three decades of research exploring body image concerns in women focusing particularly on pathological or disturbed body image such as eating disorders and body-weight dissatisfaction (Cash & Deagle, 1997; Grabe, Ward, & Hyde, 2008; Hsu, 1982). Body image difficulties in women are predicted by several variables related to their relationships with others including sexual abuse, peer pressure, and insecure attachment (Cash, Theriault, & Milkewicz, 2004; Dohnt & Tiggemann, 2006; Smolak & Murnen, 2002).

Body awareness and dissatisfaction with weight and parts of the body have been shown to develop during childhood with pre-teen girls as young as seven internalising the *body ideal* perpetuated in society (Dohnt & Tiggemann, 2006). The body ideal is a term used to describe a societal value placed on what is widely perceived as a desirable physical appearance (Balcetis, Cole, Chelberg, & Alicke, 2013). Exposure to idealised media imagery and gender-role norms have been cited as influencing self-objectification in these young girls. Objectification theory has proposed to explain the development of body image problems in girls, adolescents

and women. It posits that a woman's perception of her body can be related to that of an object, reducing the woman to the sum of various body parts and shapes. When a woman self-objectifies she perceives her body parts as physically representative of her entire self-worth (Fredrickson & Roberts, 1997). Furthermore, objectification theory asserts that girls and women are socialised in Western society to treat themselves and their bodies as objects to be evaluated by others. This manifests itself as an increase in body surveillance whereby the woman perceives herself as an object and experiences body shame for not conforming to a thin ideal (McKinley, 1998; Noll & Fredrickson, 1998).

Self-objectification within mostly white samples has been demonstrated to predict physical and psychological difficulties including eating disorders, low levels of self-esteem, and depression in women (Grabe, Hyde, & Lindberg, 2007; Johnson & Wardle, 2005; Neumark-Sztianer, Paxton, Hannan, Haines, & Story, 2006; Paxton, Neumark-Sztianer, & Hannan, 2006).

Pressure exerted by images of thin desirable women in the mainstream media has been proposed as one of the major influences on body esteem in women. Media exposure is related to objectification theory as it is the process by which women internalise the ideal thin self (Harper & Tiggemann, 2008). The internalisation of these cultural standards posits that women perceive sexualised media and portrayals of women in Western culture as normal, desirable, and required (McCreary, 1997). The discordance between the idealised media image and the individual's real appearance is purported to influence their levels of psychological distress such as anxiety (Monro & Huon, 2005).

In women, self-reported and experimental manipulation of media exposure predicts multiple indices of body image difficulties including problematic and

disordered eating behaviours, beliefs, and body image dissatisfaction (Grabe et al., 2008). Grabe et al., conducted a meta-analysis comprising 141 studies which included correlational and experimental designs. A strength of the meta-analysis was the inclusion criteria that required studies to have incorporated a measure of media exposure rather than self-reported media impact. Small but consistent mean effect sizes showed increased media exposure was associated with body image dissatisfaction ($d = -.28$), internalisation of the thin ideal ($d = -.39$; i.e. thinness being a key component of attractiveness whereby a woman's body esteem is negatively affected if she is unable to conform), and dysfunctional eating behaviours and beliefs ($d = -.30$). The pattern of results indicated that for women, media exposure has a relationship with levels of body dissatisfaction, internalisation of the thin model, and bulimic or anorexic attitudes and behaviours. The relationship between general media exposure and dysfunctional eating behaviours and beliefs was slightly stronger for adult women compared with adolescents in the study.

Though these patterns of findings are often generalised to all women, there has been limited research into body image among lesbian populations. There is tentative evidence that, compared to heterosexual women, same-sex attracted women may be less likely to experience the same levels of body image disturbance and be influenced by idealised images of women in the media. For example, a two-phase cross-sectional study involving 209 and 141 lesbian and bisexual women found that lesbian/bisexual women prefer heavier figures with low waist-to-hip ratios and larger breasts (Cohen & Tannenbaum, 2001). In contrast, heterosexual women have been shown to find thin figures more attractive and the ideal (Singh, 1994). In another cross-sectional study by Bergeron and Senn (1998), body image differences were

investigated between 108 lesbian and 115 heterosexual women. Lesbian/bisexual women reported feeling fitter, having higher body satisfaction with their lower bodies, and were less likely to internalise sociocultural body norms compared with heterosexual women. These findings tentatively suggest that in women, same-sex attraction may act as a buffer against idealised cultural norms.

Examining objectification theory in gay and lesbian populations, Engeln-Maddox, Miller, and Doyle (2011) examined a sample of 92 heterosexual women, 99 lesbian women, 102 heterosexual men and 87 gay men. They found that gay men and heterosexual women experienced similar effects of body surveillance but found no significant relationship between sexual objectification and body surveillance for lesbian women. Morrison, Morrison, and Sager's (2004) meta-analysis indicates the difference between heterosexual and lesbian women's body satisfaction is minimal. Although these studies suggest lesbians may not internalise sociocultural 'feminine' body norms to the same extent as heterosexual women, research has not yet explored whether gay community media is associated with body image perceptions in lesbian women.

Thus, for heterosexual women, media exposure is an important predictor of body image and eating disorder behaviour problems while a small number of quantitative, cross-sectional studies have shown lesbians may differ in terms of experiencing levels of self-objectification.

Body Image Perceptions Among Heterosexual Men

The findings from research on women and body image cannot be readily generalised to men. Gender specific differences exist between men and women in terms of self-construct and identity (Bachman, O'Malley, Freedman-Doan, Trzesniewski, & Donnellan, 2011; Schmitt, Realo, Voracek, & Allik, 2008). Research

into body image concerns among men is becoming more widespread and has gained momentum during the last two decades (i.e., Bergeron & Tylka, 2007; Frederick, Peplau, & Lever, 2006). Men adopt specific gender-role norms determining the way in which they behave and construct the self while these norms differ for women. For example, behaving in concordance with the values of success, power, emotional control, and competition are endorsed more frequently by men, as gender specific traits, than by women (McCreary, Saucier, & Courtenay, 2005; Steinfeldt, Gilchrist, Halterman, Gomory, & Steinfeldt, 2011).

In a cross-sectional study McCreary, Saucier, and Courtenay (2005) examined the relationship between gender-role traits and muscularity in a sample of 157 men and 343 women aged between 17 and 24 years. They found a relationship between male-type norms and behaviours and the desire to appear physically muscular. The muscular body type has also been perpetuated in the mainstream media as the outward definition of idealised masculinity. As a consequence, men can feel pressure to transform their body in order to represent this particular external identity (Ricciardelli, Clow, & White, 2010).

Dissatisfaction with weight is primarily a concern for women while men have been found to be divided between those who wish to lose weight and those who wish to gain muscle tone (Davis & Cowles, 1991). For men, the primary motivation is not thinness but obtaining a trim V-shape with wide shoulders (Abebe, Lien, Torgersen, & Von Soest, 2012; Furnham, Badmin, & Sneade, 2002). Muscularity is associated with gender-role attributes such as strength and happiness, while skinniness and obese male body types are negatively associated with being lazy and sneaky (Cafri & Thompson, 2004). Men who construct a muscular physique are also less likely to experience the same types of eating disorder symptoms as women. For example,

women on average possess a stronger inclination to lose weight to achieve a thin physique leading to more frequent purging behaviours than men (Anderson & Bulik, 2004; Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2002). On the other hand, men are likely to engage in behaviours such as excessive exercise to obtain a muscular physique which becomes an important part of constructing a masculine identity (Strelan & Hargreaves, 2005).

In men, low self-esteem has been associated with depression, eating disorders, the use of performance enhancing substances such as steroids, body dissatisfaction and muscle belittlement (the belief that an individual is less muscular than they are; Olivardia, Pope, Borowiecki, & Cohane, 2004; Parent & Moradi, 2011). Parent and Moradi conducted a study with 270 college men. Analysis using a structural equation path model showed that the internalisation of cultural standards of attractiveness (i.e. the muscular ideal) significantly predicted a drive for muscularity, the probability of steroid use, and intention to use steroids. This result suggests that external muscular appearance is of importance to men and communicates strength and masculinity. In a hierarchical regression involving 82 male university students, Strelan and Hargreaves (2005) found that men who exercised to enhance appearance were likely to report lower body esteem and men who self-objectified were likely to exercise to enhance appearance. However, this model only predicted 12% of the variance in body esteem in men suggesting that other unassessed factors may also influence the relationship between exercise motivation and male body image.

Eating disorders and over-exercise are evident in some heterosexual men who strive to attain hyper-muscular physiques (Esco, Olson, & Williford, 2005; Goldfield, Blouin, & Woodside, 2006; Hallsworth, Wade, & Tiggemann, 2005). Goldfield, Blouin and Woodside assessed 74 competitive and recreational body builders and

found that body builders who employed extreme body modification techniques in their training were more likely to binge eat, and to meet DMS-III-R criteria for bulimia nervosa. This preoccupation with muscle tone and masculinity, or muscle dysmorphia, has been likened to a reverse form of anorexia nervosa in women (Esco, Olson, & Williford, 2005).

Studies have indicated that 5%-15% of all anorexia nervosa and bulimia diagnoses, and up to 40% of binge eating disorder cases occur in boys and men (Muise, Stein, & Arbess, 2003) though the etiology of these disorders is often unexamined. Jones and Morgan's (2010) review of the literature suggests that heterosexual men express different motivations for eating restriction than women such as reducing obesity to obtain normal weight (whereas women aim to meet a very thin sexual ideal). Research examining eating disorders and body image in men has been hampered by problems relating to diagnosing men because of a gender bias inherent in the definition of eating disorder symptoms (for example amenorrhea is a criterion for anorexia whereas no male equivalent is supplied). Weight loss is assessed as a primary factor for females in formulating a diagnosis while body fat and muscularity are ignored in men entirely (Jones & Morgan, 2010). Furthermore, there is a distinct lack for normative data available for eating disorder measures for men.

Researchers have tended to arrive at the same explanation for the development of body image problems in men as they have for women: self-objectification. It has been hypothesised that objectification theory is also relevant to men as the muscular male image in the media has progressively become more frequently presented, sexualised, and realistically unattainable (Klein, 1992; Oehlof, Musher-Eizenman, Neufeld, & Hauser, 2009; Pope, Olivardia, Borowiecki, & Cohane, 2001; Strelan & Hargreaves, 2005). Pope et al., have stated the use of muscular imagery is frequently

used in advertising products that are irrelevant to the body. Advertisements often present men scantily clothed and performing pseudo-sex acts which can lead men to question their own sexual attractiveness, muscularity and sexual ability (Berry & Howe, 2005; Pope et al., 2001; Ridgeway & Tylka, 2005).

In contrast to body image research with women, the effects of media exposure on body image in heterosexual men has not been as extensively researched. There have been 25 cross-sectional and experimental studies exploring the relationship between mass media and pressure to conform to masculine ideals, body image and self-image outcomes (Barlett, Vowels & Saucier, 2008). The findings are similar to those reported in women; mass media exposure predicts body image dissatisfaction, lower body and self-esteem, and psychological problems such as depression (Barlett et al., 2008). Hargreaves and Tiggemann's (2009) experimental study investigated the impact of muscular media images on men's body image. They recruited 104 male undergraduate students between 18 and 35 years who were randomly allocated to one of four groups (i.e. either presented with images of 'idealised' men from television commercials or 'normal' men in commercials who were clothed and did not represent the 'idealised' body type). Results showed television advertisements which featured muscular men increased participants' levels of muscle dissatisfaction and decreased their levels of perceived physical attractiveness.

The study used a sample of male psychology students at an Australian university and, as such, is unlikely to reflect the experience of the wider Australian community nor that of people in other cultures. Furthermore, the researchers did not ask participants to indicate their sexual orientation so it is not possible to explore if the results differed according to sexual orientation. Nonetheless, the results supported the concept that in heterosexual men idealistic imagery, conveyed in televised media,

influences levels of muscle satisfaction rather than body weight per se. The results concur with the findings from other studies in the field that suggest that muscularity is the most dominant component of men's body image satisfaction (Leit, Gray, & Pope, 2002; Tiggemann, Martins, & Kirkbride, 2007).

Unlike television which offers a range of programs featuring individuals with varying body types, magazines often present the idealised body type exclusively (Labre, 2005; Pope et al., 2001; Ricciardelli, Clow, & White, 2010). Hatoum and Belle (2004) investigated, in their correlational study, whether reading male directed magazines related to muscular body image concerns. Using a sample of 89 male University students, Hatoum and Belle measured a number of body image factors including muscular attitudes, self-esteem, body improvement behaviour and concerns, and print media exposure. It was reported that 51% of participants wanted to gain an average of 15.2lbs, and 30% wanted to lose an average of 18.7lbs. Participants who had 'skimmed' more male directed magazines showed higher levels of concern regarding their muscularity, whilst also using greater amounts of beauty products, diet supplements, and spending greater amounts of time exercising. Low self-esteem was related to concerns about weight. Although correlations in the study were significant, they were generally small and, because the study was correlational in nature, a causal relationship is unable to be established. Longitudinal experimental research is required to determine the influence of male directed magazines and their relationship to body image.

A similar experimental study examined the relationship between exposure to idealised images in the print media, body image, and self-esteem in a sample of 46 University students. Hobza, Walker, Yakushko and Peugh (2007) exposed men to either idealised media or neutral images, and measured rates of body and self-esteem.

Results indicated media exposure decreased body-esteem but did not influence self-esteem. The small sample size in this study likely decreased the power to detect group differences and should be interpreted with caution. Unusually, other than appearance items, the self-esteem subscales in the study did not correlate with body esteem.

Barlett, Vowels, and Saucier (2008) conducted two meta-analyses utilising 15 correlational studies with a total sample of 4324 male participants and 10 experimental studies with a sample of 755 male participants. Similar to the findings with women, age was found to moderate the effects in men; correlational studies showed that age moderates the effect between media pressure and negative body image. College aged men reported greater pressure from mass media and higher levels of negative self-image than adolescents. Similarly, college aged men have been shown to experience higher levels of body image dissatisfaction than men who were adolescent, middle aged or older, even though their body mass index was substantially lower (Peat, Peyerl, Ferraro, & Butler, 2011). This indicates that college aged men may be at the greatest risk of idealised media influence which is more common now than it was in previous generations (Leit, Pope, & Gray, 2001).

The effect sizes for a relationship between increased media exposure and male body image dissatisfaction are similar in magnitude to those found in studies with women ($d = -.19$ to $-.22$; Barlett et al., 2008). This suggests that, like women, greater exposure to the media negatively impacts the way men feel about their bodies. Though these effects are statistically small, they may be clinically important to consider as body image is related to psychological and psychosexual adjustment in men and women. However, little research has specifically explored the role of sexualised media on problematic body image related behaviours, such as addictive exercise habits and the types of eating pathology used to control or increase weight.

Research examining the relationship between body image and media imagery in heterosexual men has faced several problems. Firstly, university populations are over-represented precluding generalisation. Secondly, many samples utilised in these studies are often small which reduces power to detect effects and between group differences. Thirdly, many of these studies have not reported the sexual orientation of their participants. This may inflate results as gay men have shown to report more appearance related concerns than heterosexual men (Beren, Hayden, Wilfley, & Grillo, 1996; Hospers & Jansen, 2005; Kimmel & Mahalik, 2005; Russell & Keel, 2002; Siever, 1994). Further research is required to establish whether men's perception of their bodies is greatly influenced by the mainstream media and how this relates to self-objectification outcomes such as excessive exercise or eating problems to manipulate physique.

So far the literature examining body image and exercise in men has shown a relationship between mood improvement and increased body satisfaction (i.e. Williams & Cash, 2001) on the one hand, and unhealthy exercise behaviours such as obligatory exercise (a compulsive behaviour and thought pattern whereby exercise dominates all areas of life and induces guilt and withdrawal symptoms when not exercising) on the other. Obligatory exercise has been related both to body image problems and eating disorder pathology for men (Chu, Bushman, & Woodard, 2008; De Young, & Anderson, 2009; Metheson & Crawford-Wright, 2000; O'Dea & Abraham, 2002; Olivardia, Pope, Borowiecki, & Cohane, 2004; Rodgers, Hall, Blanchard, & Munroe, 2001).

O'Dea and Abraham (2002) investigated exercise and eating disorders in 93 male college students using the Eating and Exercise Examination psychometric scale used with clinical populations. Sexuality data was not reported. The results indicated

that for 48% of men, exercise behaviour was related to self-esteem, and that 34% of men were distressed when prevented from engaging in exercise as often as they desired. Twenty-percent of men showed eating disorder symptoms which included weight control and binge eating, and 8% reported levels of difficulties indicative of an 'exercise disorder'.

In contrast, Rodgers, Hall, Blanchard, and Munroe (2001) recruited 141 male and 97 female adult exercisers in their repeated measures design investigating whether exercise imagery predicted obligatory exercise using the Obligatory Exercise Questionnaire. They reported that, for men, appearance related images did not uniquely predict obligatory exercise behaviour but that images depicting individuals with higher levels of energy did. This is in concordance with the gender-norm of power and strength (McCreary, Saucier, & Courtenay, 2005; Steinfeldt, Gilchrist, Halterman, Gomory, & Steinfeldt, 2011). It was concluded that improved appearance was more likely a benefit of exercise rather than a motivating factor. Different findings were reported in Berry and Howe's (2005) experimental research into the effects of exercise advertising on 108 female and 70 male introductory psychology students who were randomly assigned to six different groups (i.e. control group, muscular advertising, and health advertising). They reported that muscular appearance focussed advertising had a negative effect on men's exercise self-efficacy in a similar way that images of thin women negatively influences women's body image. Age was not related to body dissatisfaction for either men or women whereas for younger men body satisfaction was associated with an increase in exercise.

Another study by Davis and Cowels (1991) examined the relationship between gender, age, body image and exercise in 112 women and 88 men who described themselves as regular exercisers. In the observational study, self-described exercisers

reported on multiple indices measuring body image satisfaction, weight, diet concerns and exercise habits. Findings suggested that men were divided between those who wanted to lose weight and those who wanted to gain muscle tone. Furthermore, increased body satisfaction was associated with participation in exercise for younger, rather than older men.

An investigation of obligatory exercise and eating disorder symptoms among 190 female and 81 male second and third year University students was conducted by Matheson and Crawford-Wright (2000). Results from the Eating Disorder Inventory (EDI) and Obligatory Exercise Questionnaire (OEQ) showed a significant difference between identified obligatory ($n = 32$) and non-obligatory exercisers ($n = 242$) on measures such as the 'drive for thinness' and anxiety. Although the obligatory exercisers in the study did not meet criteria for anorexia nervosa, EDI scores did follow a similar pattern to those of a clinical population. However, the number of obligatory exercisers was relatively small compared to the non-obligatory exercisers raising issues of confidence in comparing groups.

In summary, the literature relating to obligatory exercise and body image in men is conflicted and contradictory. Some studies show little to no relationship between body image concerns, eating pathology and participation in exercise while others report obligatory exercise as an outcome of poor body perception and problem eating. Samples are either comprised of University students or athletes which prevents generalisation to the wider community. In some studies, over-exercise has been poorly defined and features the use of measures of physical activity rather than addictive exercise behaviours and cognitive processes. Although the literature indicates that exercise has some beneficial effects in terms of improving body esteem, it has suggested that over-exercise behaviour can also result from either weight or

muscular concerns. More research needs to be conducted exploring how obligatory exercise relates to weight control, the drive for muscularity, and also to the types of eating disorders exhibited in men.

Heterosexual men face several challenges in relation to body image including the drive to achieve a muscular body-type, maintain trimness, eating pathology and obligatory exercise to control weight and shape. Studies may also benefit from reporting the sexual orientation of participants.

Body Image Perceptions Among Gay Men

A recent meta-analysis of 27 quantitative studies which compared body image among 984 gay and 1397 heterosexual men found that, overall, gay men experienced greater body image dissatisfaction than heterosexual men, although the effect size was small ($d = .29$; Morrison, Morrison, & Sager, 2004). The differences between gay and heterosexual men was strongest when BMI scores were equivalent ($d = .33$). This supports previous findings that gay men are generally less satisfied with their body image than heterosexual men and may be at risk of developing further psychological problems. Kane (2010) urged caution when interpreting the results of some of these studies. He argued that the small magnitude of the difference in body image between gay and heterosexual men is overstated. Though it is statistically significant, it represents a very small difference at the item level on assessment measures and thus might be very small in qualitative or clinical terms. However, most authors concur that gay men score higher on appearance related dissatisfaction measures, though larger samples and the use of clinical samples are necessary to establish the magnitude of body image problems within both general and clinical populations.

Body image differences between gay and heterosexual men have been attributed to a different construction of masculine identity for minority men (Connell,

1992). For example, some authors suggest that the gay community perpetuates an increasingly sexualised and stylish representation of the body ideal that is distinct from the mainstream media in order to appeal to gay men (Duggan & McCreary, 2004). The creation of a hyper-masculine muscular body ideal may have resulted from attempting to combat the perception of gay men as feminine or susceptible to muscle wasting during the AIDS epidemic (Drummond, 2005; Klein, 1993; Nardi & Stoller, 2008; Schope & Eliason, 2004; Shernoff, 2002). Authors have speculated that gay men value physical appearance in themselves and sexual partners to a greater extent than heterosexual and lesbian women because of establishing a different cultural identity (Bailey, Gaulin, Agvei, & Gladue, 1994; Bailey, Kim, Hills, & Linsenmeier, 1997; Reitzes, & Diver, 1982; Siever, 1994).

Similarly, some research suggests that body appreciation and idealised appearance have evolved differently from the mainstream community; a community from which some authors argue gay men have previously been stigmatised, ostracised and ridiculed (Bailey, Gaulin, Agvei, & Gladue, 1994; Hutson, 2010; Nardi & Stoller, 2008; Siever, 1994). For some gay men, masculinity is related to self-esteem and acquiring a masculine partner (Sanchez, Greenberg, Liu, & Vilain, 2009; Sanchez, Westerfeld, Liu, & Vilain, 2010).

The qualitative literature has provided insight into the individual experiences of gay men and the pressures they experience to either conform or not conform to the dominant culture. Clarkson (2006) reviewed 10 online discussion topics relating to body performance and the depiction of sexuality on a gay website for ‘straight-acting’ men (i.e. gay men who perceive themselves as not being effeminate). He concluded that men who reported feeling stigmatised by their homosexuality aimed to blend into the wider and dominant heterosexual community. It was speculated that the adoption

of masculine norms and body shape, or ‘heterosexualisation’, helped gay men reduce the stress they felt from internalised homophobia, and that a muscular body self-view served as a protection against homophobic physical attack (Clarkson, 2006; Kimmel, 2004).

Internalised homophobia is described by prominent authors in the gay literature as self-hatred of stereotypical, effeminate or ‘gay’ behaviours perceived negatively by the wider, dominant culture, and awkwardness about one’s homosexuality leading to the avoidance of gay related feelings, emotions and attractions (Hatzenbuehler, Nolen-Hoeksema, & Erickson, 2008; Kimmel & Mahalik, 2005; Reilly & Rudd, 2006).

Clarkson’s (2006) findings suggest that heterosexual masculine norms may also be widely adopted among members of the gay community. Similarly, conformity to heterosexual masculine norms could allow some gay men to feel more comfortable with their own sexuality and help relieve their sense of internalised homophobia as it would be unlikely that their sexuality would be questioned (Kimmel & Mahalik, 2005). Clarkson did not conduct data analysis on the discussions reviewed and information relating to how many online posts, overall, were reviewed was not reported.

Nardi (2000) postulated that the gay community is divided when subscribing to masculine norms and ideologies into those who seek acceptance through portraying themselves as ‘masculine’ and those who were ‘feminine’ because they either could not obtain a ‘masculine’ physique, or did not value heterosexual masculine ideologies. ‘Straight acting’ men, although acknowledging their homosexuality, have often claimed to be ‘real men’, unlike their more effeminate counterparts who do not subscribe to the same masculine ideologies; this prejudice infers that gay men who do

not hold traditional masculine norms are somewhat inferior and damage the image of gay men in the community (Clarkson, 2006; Hamilton & Mahalik, 2009).

Connell (1992) explored masculine norms among gay men in his qualitative sample of eight men from metropolitan Sydney. He reported that four participants expressed relief at 'coming out' and not having to subscribe to rigid masculine ideologies that suppressed their personal expression for many years. Similarly, Drummond (2005) also explored masculine norms in a qualitative study of 14 gay men and found that most indicated they often changed their mannerisms and body identity in certain situations to make sure they were presenting themselves in an accepted and masculine light. Drummond concluded that the gay men in the sample experienced constant pressure to evaluate their behaviours which could be attributed to societal prejudice and their own internalised homophobia.

Although qualitative studies have investigated a range of difficulties associated with body image problems from perceptions of masculinity (Barron & Bradford, 2007), through to fashion styles and gay identity (Clarke & Turner, 2007), and gay men's perception of penis size (Drummond & Filliault, 2007), the design of these does not inform knowledge regarding the prevalence of these difficulties within the wider gay community. Therefore, quantitative and longitudinal studies utilizing larger sample sizes are necessary to develop and test theoretical constructs and factors which explain the etiology of body image difficulties for this population.

There have been relatively few longitudinal studies exploring body image among gay men and the amount of qualitative and quantitative research appears to be evenly divided. Filliault and Drummond's (2009) literature review of gay body image reported that there have been 25 quantitative studies published. Of those, 15 studies included samples of less than 100 gay men, four of which included less than 30 gay

participants. Subsequently, it can be argued that much of the research into gay men's experience of body image lacks sufficient power to detect effects. Furthermore, Filiault and Drummond argue that the reduced power may underestimate the prevalence of body image difficulties in gay men, while at the same time, masking the magnitude of body image disturbance.

A paucity of research exists examining which body parts gay men are most or least satisfied with and how this may relate to the drive for weight control or muscle development. There is some evidence that masculine body ideals may impact on gay men's body image satisfaction. Martins, Tiggemann and Churchett (2008) examined body part satisfaction in a sample of 92 gay men examining 'body part dissatisfaction', 'body part importance' and 'extent of worry' about appearance. Participants were required to identify their current size and shape and rate their ideal body type (i.e. from 'extremely unmuscular' to 'extremely muscular'), the importance of body parts to their self perception, and the extent they worried about specific body parts on a 7-point scale. Gay men reported that body weight and muscularity were the most important aspects of physical attractiveness and that these were the components they worried about the most (with weight concerns ranking slightly higher than muscularity concerns). The next highest rankings were concerns about head hair, body hair, and penis size, although distress scores on these items fell below the midpoint. This indicates that the gay men were less concerned about individual body parts when compared with weight and muscle tone.

The researchers postulated that the discrepancy between men's own body shape and the ideal perpetuated by society would lead inevitably to increased stress to conform to the idealistic body type. However, as the study involved experimenter derived scales, conclusions about both the clinical significance of levels of reported

body image concerns and generalisation of the findings to men in the general community, could not be made. Furthermore, no measurement of sexual orientation was included to define the construct of 'gay'. Rather, participants were recruited from gay communities, relying solely on self-identification of same-sex attraction.

In one of the few studies utilising a large sample, Kimmel and Mahalik (2005) explored body image and idealistic body types in their sample of 357 gay men aged between 18 and 74 years. They used the Masculine Body Ideal Distress Scale (MBIDS; Kimmel & Mahalik, 2004), the Internalized Homophobia Scale (IHS; Martin & Dean, 1987) and the Stigma Scale (SS; Martin & Dean, 1987), and found that internalised homophobia and gay stigma were predictors of muscular body image dissatisfaction. Kimmel and Mahalik suggested that gay men experienced body image dissatisfaction as a result of victimization in society and that those gay men who reported feeling stigmatised for their sexuality were more likely to build or desire muscular physiques as a defence against prejudice, homophobia, and effeminate stereotyping than gay men who did not report feeling stigmatised. Although significant, the model accounted for small variances in body image dissatisfaction (5%) and masculine body ideal distress (13%).

The results of Kimmel and Mahalik's (2005) study mirror the statements made by HIV-positive men in Halkitis, Green and Wilton's (2004) qualitative study. As one participant expressed during an interview; "Well-built men usually give an initial feeling of masculinity at first sight. Since I like this perception, since it matters a lot to me to be masculine, I work out". It was theorised that because gay culture has had to fight for existence for so long, gay men have adopted an extreme version of the heterosexual body-image ideal; a physically strong, toned and sexually appealing male who combines muscularity with beauty.

Consequences of poor body image have been related to poor mood outcomes for gay men while members of the gay community are susceptible to a range of health risks such as drug use, binge drinking, smoking, and unprotected sex (Willoughby, Lai, Doty, Mackey & Malik, 2008). Gay men have also reported higher lifetime incidence of anxiety, mood disturbance, substance use problems, and are more likely to attempt suicide and experience self-harm in the process (Diaz, Ayala, Bein, Henne, & Marin, 2001; Fergusson, Horwood, & Beautrais, 1999; French, Story, Resick, Remafedi, & Blum, 1998; Hegna & Wichstrom, 2007; Herrell et al., 1999; Lock & Steiner, 1999, Meyer, 2003; Safren & Heimberg, 1999).

In relation to body image, Wrench and Knapp (2008) investigated the association between body image perceptions and depression in a sample of 233 gay, lesbian and bisexual men and women and found a positive relationship between appearance fixation and depression. In the cross-sectional study, body image accounted for 27% of the variance in depression. Individuals with higher levels of body image fixation were more likely to discriminate against individuals who were larger and possessed greater amounts of bodyweight than those with lower levels of body image fixation. Men who were more fixated on appearance and were more likely to discriminate against larger individuals also reported lower levels of self-esteem.

In another study, Zea, Reisen, and Poppen (1999) recruited a sample of 106 gay men and lesbian women from gay events and found that, although gay adults have been considered a subculture at risk of psychological problems, participants in the study were shown to demonstrate levels of resilience, low levels of depression and effective coping styles. The authors argued that individuals in the gay community who experience greater levels of social support are less likely to experience depressive symptoms. It could be speculated that involvement in the gay community

could act as a buffer against rates of depression and reduce the risk of eating problems and overexercise but, as yet, this postulation has not been quantified. Future research may benefit from examining whether gay community involvement reduces rates of depression and, as a consequence, reduces the magnitude of eating pathology.

The literature on body image in gay men has either concentrated on body weight concerns or muscularity concerns as distinct and unrelated factors. Filiault and Drummond (2009) advise that any research that measures body image in gay men must include both measures of muscularity and trimness. They indicated that to examine muscularity or trimness as separate and independent constructs is a “misunderstanding of gay men’s lives that is evident in much of the quantitative body image research in this area”.

A limitation in the literature is that levels of sexual attraction are not always measured; authors tend to rely solely on participants identifying as gay rather than quantifying the exclusivity of same-sex attraction. Solely focussing on sexuality as a predictor of body image precludes thorough investigation into the unique contributing factors of body image disturbance in gay men. However, there is a growing body of literature that has examined the outcomes of body image disturbance in gay populations such as weight control behaviours.

Weight Control Behaviours in Gay Men

It was once hypothesised that gay men identified with feminine norms and through the prescriptive conception of ‘masculine’ and ‘feminine’, the stereotypical gay persona was generalized to the wider gay population (Corbett, 1993). This conception is overly simplistic as to identify the gay subculture as either masculine or feminine neglects the variability of attitudes and behaviours within it. Corbett (1993), a psychoanalyst, noted that the conception of homosexuality being identified as

‘feminine’ was probably based on the passive nature of gay sexuality, that is, anal penetration; a submissive position which counteracts the masculine notion of power and dominance. This then led to the emergence of the gay male as a type of ‘counterfeit woman’. Corbett, in his report of his experiences conducting therapy with homosexual clients, suggests that homosexuality is not, in fact, devoid of masculinity. It is, on the other hand, an entirely new and unexplored construct of what it means to be masculine and may influence the way in which gay men diet and monitor their bodyweight.

Gay men are said to be over-represented in populations of men with eating disorders making up 20%-33% of the diagnoses (Andersen, 1999; Gettelman & Thompson, 1993; Strong, Singh, & Randall, 2000; Strong, Williamson, Netemeyer, & Greer, 2000). The conclusion that gay men have higher prevalence rates of eating pathology is generally attributed to four main studies (Carlat, Comargo, & Herzog, 1997; Herzog, Norman, Gordon, & PePOSE, 1984; Schneider & Agras, 1987; Yager, Kurtzman, Landsverk, & Wiesmeier, 1988). Kane (2010) strongly argues that clinicians should not conclude there is a higher prevalence of eating disorders among gay men based on the twelve gay men used in three of these widely cited studies.

Russell and Keel (2002) compared body image concerns in 64 heterosexual and 58 gay men recruited from the wider community and aged between 18 and 50 years. Participants completed the Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) and Bulimia Test –Revised (BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991) to examine whether they met diagnostic criteria for eating disorder symptoms. It was found that a homosexual orientation explained a significant proportion of variance in body image dissatisfaction after controlling for self-esteem, depression, and acceptance of homosexuality. It was reported that

approximately 14% of the sample of gay men appeared to meet criteria for bulimia nervosa compared with no heterosexual participants. Almost 21% of gay men scored above the cut off and met criteria for anorexia nervosa compared with one heterosexual participant. Gay men also exhibited higher levels of depression than heterosexual men with 12% meeting the cut-off for a major depressive episode. On average, however, eating disorder scores for gay men fell within expected limits.

A similar cross-sectional study by Hospers and Jansen (2005) investigated body image and eating disorder symptoms in a sample of 70 gay and 169 heterosexual men with a mean age of 23 years via the internet. Eating disorder symptoms and body image dissatisfaction were more attributable in gay men than heterosexual men. The results also showed that peer pressure was closely related to body image dissatisfaction for gay men. It was found that sexual orientation and peer pressure predicted eating disorder symptoms and that both were indirectly related to eating disorder symptoms via body image dissatisfaction and self-esteem in the regression analysis. Levels of masculinity and femininity were unrelated to eating disorder symptoms. In contrast, other studies have shown that gay men are susceptible to experiencing gender-role conflict; the expectation that men will behave in concordance with prescribed gender norms and behaviours which, when broken, cause an intrapsychic conflict and body image disturbance (Blashill & Vander Wal, 2009; Kimmel & Mahalik, 2005; McCreary, Saucier, & Courtenay, 2005).

Blashill and Vander Wal's (2009) cross-sectional study examined the relationship between gender-role conflict, eating disorders and body image dissatisfaction in a sample of 228 gay men aged between 18 and 75 via the internet. Results of the regression model demonstrated a relationship between gender-role conflict, body image dissatisfaction and eating disorder symptoms. Younger men in

the study possessed higher levels of gender-role conflict and depressive symptoms compared with older gay men. Blashill and Vander Wal reported that depressive symptoms such as negative affect and social sensitivity (the hyper-vigilant awareness of the emotions and behaviours of others that may be perceived as critical) fully mediated the relationship between gender-role conflict and eating disorder symptoms. Social sensitivity also mediated the relationship between gender-role conflict and body image dissatisfaction. Depressive symptoms were not a significant mediator alone. However, gender-role conflict was positively associated with body image dissatisfaction and eating disorder symptoms. This suggests that endorsing gender - role, or masculine norms, alongside symptoms of depression, can increase body image dissatisfaction and lead to behaviours such as restricted eating in order to fit in with perceived body ideals.

Blashill and Vander Wal (2009) concluded that masculine norms or masculinity might be more important in the development of eating disorders among gay men in comparison with heterosexual men. This study incorporated bisexual men in the sample and does not accurately reflect gay men. The authors concluded that "...men who score toward the middle [on measures of sexual orientation] experience greater conflict than men who score closer to either extreme. Perhaps these gay men, who report variety in their sexual attraction, have not fully completed the process of coming out" (p. 212). Although this may be considered a methodological flaw, it is not unusual for studies to include bisexual men to increase sample size. Similarly, the researcher's body image measure (Body Image Attitudes Scale) produced a global score that combined Muscularity, Body Fat, and Height rather than assessing each as distinct but related factors.

Despite the generally small or unequal sample sizes which reduces the power of statistical analysis, the literature appears to be equivocal that homosexuality is related to body image problems and, as a consequence, eating disorder symptoms in order to control and manage body image perception. Depression may also relate to body disturbance while social support may act as a buffer against depressive symptoms and eating restriction. Although there are now a growing number of studies examining the prevalence of eating problems in gay men, few studies have explored other body shaping strategies such as obsessive overexercise.

Obligatory Exercise in Gay Men to Improve Physique

To date, no study has examined the cognitive and behavioural processes associated with exercise fixation known as obligatory exercise in gay men. It is unknown whether obligatory exercise is related to body image and eating difficulties to the same extent as heterosexual men in gay populations. Obligatory exercise behaviours may be influential in understanding the link between excessive exercise and eating disorder pathology, and assist in early detection of eating problems as demonstrated in the heterosexual literature (Ackard, Brehm, & Steffen, 2002; Steffen & Brehm, 1999).

The studies which have been conducted with gay men indicate that improving one's appearance is a motivating factor to engage in regular exercise. In one cross-sectional study examining body satisfaction and exercise in 38 heterosexual and 39 gay men, Brown and Graham (2008) reported that gay men who attend gymnasiums exercised to improve their physique first and foremost. This result was in contrast to heterosexual counterparts who stated they attended the gym mainly for enjoyment and leisure. It was also reported that, after controlling for men's heights, gay gym-active men possessed lower BMI (body mass index) scores on average than heterosexual

males. Gay men were also less satisfied with their body than heterosexual men.

Brown and Graham postulated that gay men might be striving to attain a thin physique in response to the gay ideal being leaner than the heterosexual ideal.

Brown and Graham also found that higher levels of masculinity significantly contributed to overall body satisfaction. Though gay men in the study reported marginally but significantly higher levels of femininity compared to heterosexual participants, masculinity scores between the groups did not statistically differ. It was postulated that gay males attending gyms could be exercising in order to gain acceptance and popularity among potential partners. However, this study can only be generalized to gym populations as a control group of participants who did not attend gyms, representative of the wider gay community, were not included. It should also be noted that although the femininity mean scores for gay ($M = 4.85$, $SD = .48$) and heterosexual men ($M = 4.47$, $SD = .65$) were significantly different, the magnitude of the difference was quite small and may not support the conclusion that gay men are motivated to attend the gym to increase their sense of masculinity, especially since no significant difference between masculinity scores existed.

A similar cross-sectional study by Grogan, Connor and Smithson (2006) examined the relationship between homosexual orientation and exercise behaviours in 22 heterosexual and 23 gay men, and 24 heterosexual and 24 lesbian women. Results were similar to Brown and Graham (2008) in that gay men were more likely than heterosexual men to be motivated to exercise to enhance their physique. Gay men were also less likely to enjoy exercise and engage in sport. Furthermore, gay men were less concerned with health related benefits of exercise and more concerned with aesthetic appearance and the attainment of an idealised body. The researchers

speculated that this was due to gay men pursuing the socially desired physique which is highly valued in the gay community as the sexual ideal.

HIV-positive gay men have shown a tendency to self-objectify and exercise in order to improve body image. Halkitis, Green and Wilton (2004) conducted a two-phase qualitative and quantitative analysis of masculinity, sexuality and sexual behaviour among 15 and 114 HIV-positive men. They reported that many HIV-positive men describe their choice of sexual partner as enhancing their own attractiveness and that frequent sexual relationships with different partners enhance both self-esteem and body image. Yet this affirmation of their attractiveness is only short-lived as feelings of undesirability are likely to resurface motivating a repeated pattern of appearance reaffirming sexual behaviour. During the qualitative phase, Halkitis, Green and Wilton indicated that HIV-positive gay men spent a great deal of time exercising and working out in order to maintain an attractive physical appearance.

In a cross-sectional study investigating the relationship between body image and exercise motivation in 195 gay and bisexual men, Zamboni, Crawford and Carrico (2008) reported that higher levels of body image satisfaction in gay and bisexual men was also associated with high levels of exercise motivation both intrinsically (exercising for enjoyment) and extrinsically (to obtain particular rewards). Poor body image was also the best predictor of amotivation (a lack of motivation) for exercise engagement, with negative mood difficulties adding to the prediction in the multiple regression model. This indicates that individuals with poor body image and who are depressed are less likely to engage in exercise. The researchers' conclusions implied that body image satisfaction can be a direct benefit from sports engagement and improve overall self-esteem. High levels of amotivation

in the study were related to lower levels of self-esteem, life satisfaction and negative mood problems. As correlations in the study were small ($-.25$ and below), it was likely many other factors were influencing body image.

So far, there is a gap in the literature exploring problematic exercise behaviours. The aforementioned studies associate exercise with appearance improvement which suggests that obligatory exercise may also be related to body image as a way to mould the body, increasing muscularity. Future research into obligatory exercise in gay populations may need to examine the magnitude of the effects of weight and muscular concerns on excessive exercise behaviours and the relationship with eating pathology.

Involvement in the Gay Community and Physical Appearance

Some authors have assumed that homosexuality and involvement in the gay community are specific risk factors for both problematic exercise and eating disorders (i.e. Boroughs & Thompson, 2002; Brown & Graham, 2008; Feldman & Meyer, 2007; Grogan, Connor, & Smithson, 2006; Hospers & Jansen, 2005; Siever, 1994). The gay community is often defined by authors as a range of activities (such as attending clubs or groups) which specifically appeal and are frequented by gay men. Authors have postulated that because the gay community consists of men trying to physically appeal to other men and desiring a certain appearance, they are more likely to engage in behaviours that will control their weight or muscle tone. Similarly, because the ideal body type within the gay community is so highly valued, gay men experience a high level of peer pressure to conform to this ideal. There is very little research that has examined whether gay community involvement is related to body image at all. Despite these conclusions, several studies have examined how the gay community represents the ideal body.

In a review of advertisements in the personal columns of magazines and newspapers Epel, Spanakos, Kasl-Godley, and Brownell (1996) stated that gay men often specified the desired or preferred weight, body shape and height requirements of potential partners. Although gay men are concerned with their own physique, they are also concerned about the physical attractiveness of their partner as a reflection on them (Siever, 1994). This could be because having a highly attractive partner may reflect positively on the individual, thereby increasing self-esteem and personal body image. Siever (1994) also concluded that gay men were more likely to view their bodies as sexual objects which can be used as tools to attract male sexual partners. Authors have commented that the purpose of idealistic male images is to associate the physical form with feelings of desire and, in the case of gay men, sexual desire (Epel et al., 1996; Oakenfull & Greenlee, 2005).

There has only been a handful of studies exploring whether identity and involvement in the gay community is associated with body image difficulties (Davids & Green, 2011; Feldman & Meyer, 2007; Kousari-Rad & McLaren, 2013; Levesque & Vichesky, 2006; Tiggemann, Martins, & Kirkbride, 2007; Wrench & Knapp, 2008). Tiggemann et al.,'s (2007) cross-sectional study examined whether involvement in the gay community predicted body image dissatisfaction. They compared levels of body image satisfaction between 134 gay and 119 heterosexual men from community groups aged between 18 and 60 years. They found that gay men described themselves as "less muscular" and that both heterosexual and gay men put on weight with age culminating in a desire to lose it. No significant relationship between body image dissatisfaction and reported involvement in the gay community was apparent for gay men. Gay community involvement in the study was conceived as frequenting gay venues, friendships, and belonging to gay organisations. However,

the measure of ‘Involvement in the Gay Community’ was experimenter-derived, and therefore, the psychometric properties such as construct validity of the measure are unclear, although internal consistency was appropriate. Furthermore, there may have been restricted variance in the central construct of involvement in the gay community because 59% of the sample was recruited from South Australia, of which 92% lived in the small city of Adelaide with relatively few gay resources and community activities. Thus the potential of the study to detect a relationship between gay community involvement and body image dissatisfaction may have been reduced.

Using the same gay community measure as Tiggemann et al., (2007) but with very different findings, Davids and Green (2011) explored body image, eating disorders and sexuality within a sample of 96 gay, 37 bisexual, and 34 heterosexual men, along with 51 lesbian, 139 bisexual, and 82 heterosexual women obtained from colleges and internet communities. Findings from the regression model showed that body dissatisfaction, body mass index, maladaptive social comparisons and involvement in the gay community were significant unique predictors of body image dissatisfaction. Body dissatisfaction and gay community involvement were unique predictors of eating disorder symptomatology though the contribution to the model was small.

Somewhat similar results were obtained in Feldman and Meyer’s (2007) quantitative study which examined rates of eating disorders in diverse gay populations and gay community involvement. The study utilised a structured interview procedure to diagnose eating disorders and incorporated 198 gay/bisexual men obtained from culturally, politically and ethnically diverse venues. Feldman and Meyer found that although there was no significant relationship between participation in the gay community and ‘full syndrome’ eating disorders in their sample, there was

a significant relationship between sub-clinical levels of the eating disorders anorexia nervosa and bulimia nervosa and involvement in gay ‘recreational organisations or groups’. However, two other measures of gay community participation showed no relationship and the authors suggested that community involvement may act as a buffer against eating disorder development.

There are several methodological issues that may account for Feldman and Meyer’s findings. Firstly, involvement in the gay community was determined by scores from three different measures including a collective self-esteem scale that did not specifically refer to gay related community groups or activities. This method could result in misclassification of participants’ levels of involvement in the gay community. Secondly, Feldman and Meyer included a dichotomous item to measure attendance at gyms that were attended by other gay men. This gross marker of exercise activity precludes thorough examination of a range of exercise behaviours. Thirdly, ‘involvement in gay community’ was based upon calculations of the percentage of time that participants spent attending professional, social, religious, political and charitable organisations that they reported were also attended by other gay men. This computational definition of ‘involvement’ precludes examination of the breadth and quality of participants’ friendships with other gay men, peers, or group involvement. Studies have shown that close gay friends, acquaintances and peers dramatically influence the behaviour of other gay men (Fergus, Lewis, Darbes, & Kral, 2009; Masini & Barrett, 2007; Smith, Grierson, Wain, Pitts, & Pattison, 2006; Vincke, & van Heeringen, 2004). Lastly, the inclusion of 27 bisexual men in the study precludes generalisation to the wider gay community.

In contrast to the experimenter derived scales used in both Tiggemann, Martins and Kirkbride (2007) and Feldman and Meyer (2007), Wrench and Knapp

(2008) utilised the validated Identification and Involvement with the Gay Community Scale (Stokes, McKiren, & Burzette, 1993) in their cross-sectional investigation. This measure required participants to rate the frequency of behaviours such as attending gay bars and the quantity of gay or lesbian friends. It also assessed whether being gay contributed to a sense of identity. The study investigated image fixation, depression and gay community involvement in a sample of 195 gay and lesbian, and 31 bisexual individuals recruited through the internet. Like the previous studies, Wrench and Knapp (2008) concluded that there was no significant linear relationship between gay community involvement and physical appearance issues. Data pertaining to bisexual and gay men were analysed together indicating a potential contaminating influence.

It was postulated that the gay/bisexual men and women who do not fit the idealised image have found social support structures with individuals similar to them within the gay community. Wrench and Knapp (2008) speculated that although the gay community may value the Anglo-Saxon idealised youth, individuals who are unable to conform create their own subculture whilst forming their own interpretation of a gay identity. This can be seen within the 'bear' subculture (larger and often hairier gay men) where weight and body hair is enviable (Gough & Flanders, 2009; Wrench & Knapp, 2008). It was suggested that peers who possess similar body types can act as a social support and buffer to protect against that saturation of idealised body types. This warrants further research.

Although the literature investigating gay community involvement and body image is small, it often does not substantiate the postulations made by other authors in the field regarding the influence and magnitude of community participation. Furthermore, the construct of 'involvement in the gay community' has been poorly defined. Two studies have utilised Tiggemann, Martins and Kirkbride's (2007) gay

community measure, while this measure has yet to be either factor analysed or tested for construct validity. Therefore, studies which feature this or similar scales should conduct psychometric testing. Kane (2010), in his recent systematic review of the body image research with gay male populations, stated that contrary to theories and postulations of past researchers (e.g. Hospers & Jansen, 2005; Siever, 1994) there appears to be little or no correlation between eating disorder symptoms and involvement, or connectedness, to the gay community as a whole. He speculated that body image difficulties which have been attributed to gay community involvement through assumptions and theories have been established only in non-clinical studies with small samples.

Involvement in the gay community, as asserted by Feldman and Meyer (2007), may instead provide gay men with the social support to reduce the effects of body dissatisfaction and eating disorder behaviour. There are several studies that have found that a sense of belonging within the gay community reduces depressive symptoms and improves overall mental health among gay men and lesbian women (McLaren & Gibbs, 2012; McLaren, Jude, & McLauchlan, 2007; McLaren, Jude, & McLauchlan, 2008). Future studies may benefit from exploring particular components of the gay community such as the exposure to sexualised media within it rather than involvement in the gay community per se. Similarly, future studies may examine involvement in the gay community as a protective factor for gay men and as a buffer for rates of depression and eating pathology.

Exposure to Gay Community Media and Physical Appearance

To explain gay men's heightened experience of body image dissatisfaction compared to heterosexual men, objectification theory has been applied to same-sex attracted men (Engeln-Maddox, Miller, & Doyle, 2011; Kozak, Frankenhauser, &

Roberts, 2009; Martins, Tiggemann, & Kirkbride, 2007; Wiseman & Moradi, 2010).

The theory indicates that greater exposure to cultural standards of attractiveness is internalised by gay men who experience levels of body shame and body surveillance.

Three studies have examined gay community media exposure and body image concerns in gay men. In an exploratory quantitative study examining pornography, exposure to fitness magazines and body image in 67 gay and 29 heterosexual men via the internet, Duggan and McCreary (2004) found significant positive correlations between gay men who read fitness magazines and higher levels of physique anxiety ($r = .28$) and an increased drive to attain a muscular physique ($r = .42$). For pornography, there was a significant correlation with physique anxiety ($r = .27$) but not drive for muscularity. There were no significant correlations between pornography and physique anxiety for heterosexual men. The correlations obtained, however, were generally small. The study developed a set of questions which contributed to a 'fitness magazine' and 'pornography scale' as the authors noted there were no global or specific measures of media exposure. The significant but small correlations may be attributable to the small sample size. Another limitation was that the authors did not report demographic information (e.g., age and geographic location) and therefore it may be difficult to generalise the findings of this research to the wider gay community. Although limited in scope, Duggan and McCreary's study provides tentative evidence that types of media accessed by the gay community may have a relationship with body image satisfaction.

Taylor and Goodfriend (2008) examined a similar relationship between gay media exposure and disordered eating in a sample of 60 gay men. Participants were exposed to either an experimental or control group, the former presenting sexualised images taken from gay websites and magazines, the latter neutral images of male

models. One significant, but small, correlation was found between media consumption and the Oral Control subscale of the Eating Attitudes Test (Garner & Garfinkel, 1979). Furthermore, *t*-tests found that exposure to the neutral images, rather than sexualised ones, increased the reporting of bulimic symptoms in the sample. The authors concluded that because sexualised media exposure showed approximately 16% of variability in the Oral Control subscale, when media exposure increases, gay men are more likely to report eating restriction. They also suggested that participants may have related to the neutral images rather than the sexualised ones because the sexual imagery was objectified and perceived as unrealistic.

A number of methodological problems should be addressed. Because images in this study were taken from well-known gay websites and publications (and were reported to represent the “ideal” body; i.e. DNA, Attitude magazine), some images were likely to have featured sexualised muscular men which were not controlled for by the researchers. The neutral images were also taken from gay publications and differentiated from the experimental images in that they featured men who were not ‘sexualised’ or ‘objectified’. The authors acknowledged that the neutral models were “generally good looking, appeared physically fit, and by general standards could be considered attractive and desirable”. The authors may have achieved different results if they examined the relationship between muscular images, muscularity and compensatory behaviours such as overexercise. The study focussed mainly on thinness and neglected muscularity entirely. It is therefore possible and unsurprising that the neutral images depicting thin and attractive male models were associated with reported bulimic symptoms.

Although not examining the role of gay media exposure and body image per se, Wiseman and Moradi (2010) investigated the relationship between internalised

cultural standards of attractiveness and body image difficulties, and eating disorder symptoms in 231 men who identified themselves as either gay, bisexual, transsexual or 'mostly heterosexual men'. The Internalization of Cultural Standards of Attractiveness (SATAQ-I) questionnaire was used in the study and incorporated items that directly reference the media portrayal of body types (e.g. "I wish I looked like an underwear model"). Path analyses revealed that the internalisation of cultural standards of attractiveness partially mediated the link between gay men's objectification and body surveillance. Body surveillance, in turn, partially mediated the relationship between internalisation and body shame, and body shame mediated the relationship between body surveillance and eating disorder symptoms. Body shame also mediated the relationship between internalised homophobia and eating disorder symptoms. Harassment in childhood for failure to conform to gender-role norms was related to eating disorder symptoms via the internalization of cultural standards of attractiveness, body surveillance, and body shame. This indicates that the internalisation of societal standards of appearance, also communicated by the media, can influence perceptions of body dissatisfaction within populations of gay men.

It was concluded that, in a clinical setting, a client may immediately respond positively to acknowledgment by other gay men that he is sexually attractive but may then continually engage in body surveillance techniques to ensure there are no changes in weight or muscularity if sexual attractiveness is a fundamental defining factor of self-worth. The client may also experience shame regarding his body if he is not regarded as sexually attractive in other occasions leading to eating disorder symptoms (Wiseman & Moradi, 2010).

The results and conclusions from this study need to be interpreted with caution due the heterogeneity in participants' sexual orientations; 12% of the sample

identified as bisexual, 2% described themselves as ‘mostly heterosexual’, and 2% identified themselves as transgender. As such, the sample did not uniquely represent gay men’s body image concerns and may have introduced confounding factors into the obtained results. The experiences of gay, bisexual, transgender, and heterosexual individuals differ greatly from each other and studies should not combine findings across these groups, although it is common practice to do so (Dodge & Sandfort, 2007; Jorm, Korten, Rodgers, Jacomb, & Christiansen, 2002; Kane, 2010).

The current literature examining gay media and body image is in its infancy but tentatively suggests there may be a relationship between targeted gay media exposure and body image. Research in this area currently faces several limitations. First and foremost, there is no consensus on the types of media exposure that is most important to assess and studies rely on a diverse range of experimenter derived measures which makes it difficult to compare findings. The development of a reliable gay media measure is necessary before future studies can reliably examine the impact of gay media on multiple indices of body image.

The Current Study

The literature has shown that heterosexual and gay men respond differently to perceived body image with gay men being more likely to express body image concerns. As a result of poor body image, gay men appear more susceptible to eating disorder symptoms in order to control weight. Although obligatory exercise has been shown as a way to increase muscle tone and control weight in heterosexual men, no studies have examined whether this is attributable to gay men. There is some tentative evidence that other factors associated with homosexual identity, such as exposure to idealised thin and muscular images depicted in gay community media may play a role in body awareness. Several recent studies have found that involvement in the gay

community has little or no relationship with body image difficulties or eating disorder symptoms. It has been hypothesised that social support within the gay community may even be a protective factor against body image difficulties and depression. Therefore, the current study will examine whether involvement in the gay community is associated with reduced rates of depression. Involvement in the gay community and gay community media will be considered as distinct, but related, constructs and the study will investigate whether a relationship exists between body image concerns and gay media exposure.

Filiault and Drummond (2009) criticized much of the literature stating that it examines only one aspect of body image, neglecting a holistic examination of the various aspects of body image that contribute to men's overall sense of satisfaction with their appearance and physical selves. To address this gap in the literature the current study assesses both overweight preoccupation and muscular aspects of body image.

Currently, no studies have explored the relationships between key constructs: gay community involvement, gay media exposure, weight and muscle concerns, and body shaping strategies such as eating restriction and obligatory exercise. This is a significant gap in the literature. The aim of the study is to test whether gay community involvement relates to increased exposure to gay media and whether this influences concern about body weight and muscle tone, leading to depression and body modification (eating restriction and exercise).

The current study aims to improve on previous studies in a number of ways by addressing several methodological problems, namely, utilising an adequately sized sample and eliminating bisexual men. Small sample sizes in the gay literature restrict the ability to generalise the results to the wider gay population, and increases the risk

of obtaining type 1 or 2 errors. Similarly, bisexual men have been shown to differ in responses to body image indices compared to gay men. This study will measure levels of same-sex attraction and utilise a sample of men who rate themselves as either ‘predominantly’ or ‘exclusively attracted to men’.

It is hypothesised that involvement in the gay community will predict exposure to gay media (Hypothesis 1; see Figure 1) which, in turn, will predict overweight preoccupation (Hypothesis 2) and muscular dissatisfaction (Hypothesis 3). Weight and muscular concern measures are expected to predict rates of depression (Hypothesis 4). Based on prior research suggesting that being an active member of the gay community may afford access to social support, it is predicted that involvement in the gay community will be directly linked to a decrease in depressive symptoms (Hypothesis 5). Levels of depression are expected to be associated with a decrease in obligatory exercise due to reduced motivation (Hypothesis 6), but related to restricted eating (Hypothesis 7). It is also hypothesised that overweight preoccupation will predict restricted eating (Hypothesis 8) while muscular concerns will predict obligatory exercise (Hypothesis 9). It is anticipated that restricted eating will predict obligatory exercise behaviour (Hypothesis 10). In concordance with young adult men’s higher susceptibility to body image disturbance, the predictors of restricted eating and obligatory exercise were expected to contribute a higher proportion of variance in younger, as opposed to older gay men (Hypothesis 11).

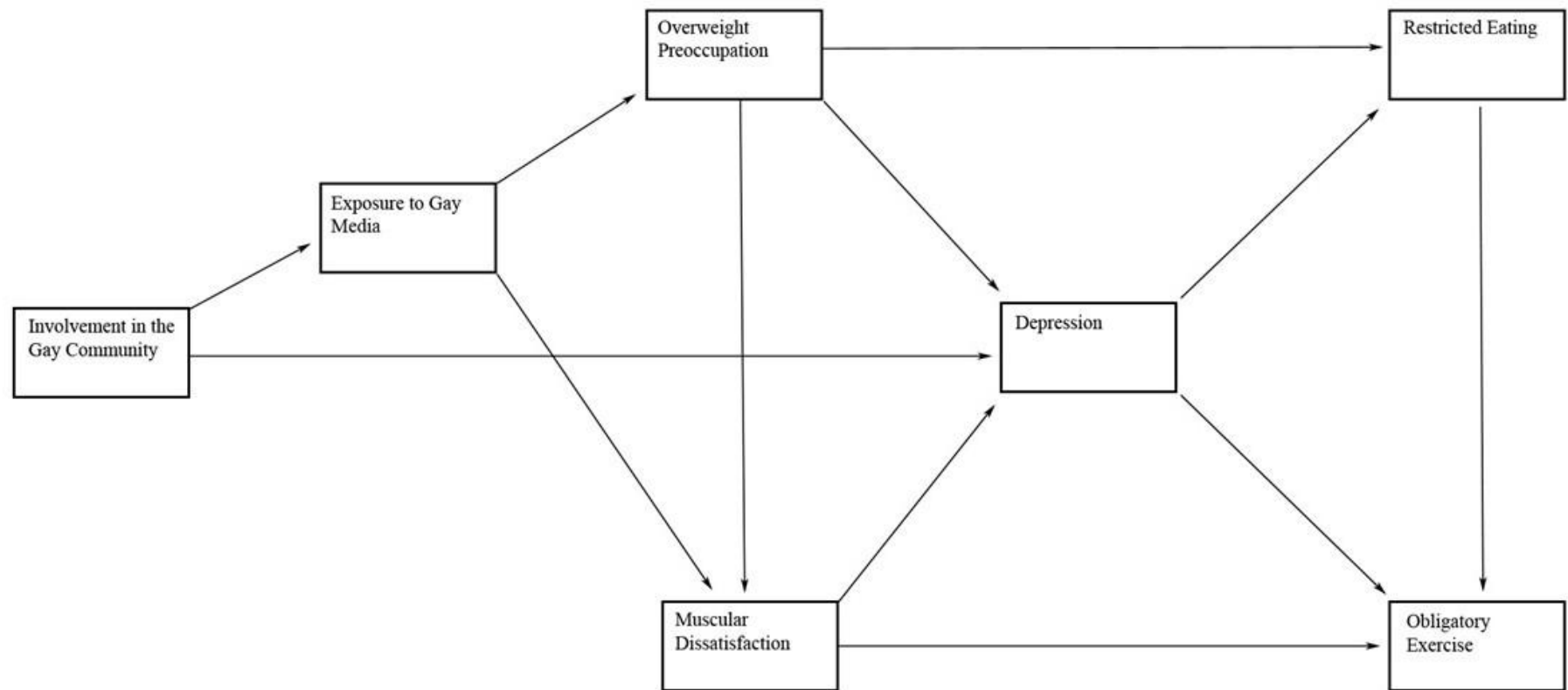


Figure 1. Proposed path-analytic model: Direct relationships between involvement in the gay community, exposure to gay media, overweight preoccupation and muscular dissatisfaction, depression, restricted eating and obligatory exercise.

Method

Participants

The sample comprised 260 gay men aged between 18 and 67 years (mean age = 35.05 years, $SD = 12.88$ years).

Within the sample, residency was reported by 63.5% as Australian ($n = 165$; mean age = 33.98 years, $SD = 11.97$ years), 15% United Kingdom ($n = 39$; mean age = 41.97 years, $SD = 12.39$ years), 16.2% American ($n = 42$; mean age = 34.02 years, $SD = 15.47$ years), 2.3% Canadian ($n = 6$, mean age = 28.33 years, $SD = 12.36$ years), eight percent of the sample were residents from other countries involving one person (.4%) each; New Zealand (aged 25 years) Japanese (aged 39 years), Romanian (aged 26 years), Chinese (aged 22 years), German (aged 32 years), Belgium (aged 51 years), Czech Republic (aged 34 years), and Italian (aged 43 years).

The majority of participants identified themselves as Caucasian ($n = 230$, 88.5%). The remaining participants identified themselves as Asian ($n = 12$, 4.6%), African descent ($n = 4$, 1.5%), Aboriginal ($n = 2$, .8%), Hispanic ($n = 6$, 2.3%) and six participants did not report their ethnicity (2.3%).

The median gross income was between \$71,000 and \$80,000 per annum while the gross annual income ranged from a minimum of <\$10,000 and a maximum of >\$100,000.

Materials

Sexual orientation.

Consistent with Sandfort, Bakker, Schellevis, and Vanwesenbeeck (2006), sexual orientation was assessed using a single item on a five-point Likert scale: “Would you please indicate your sexual preference?: 1 = *women exclusively*, 2 = *women predominantly*, 3 = *both women and men*, 4 = *men predominantly* and 5 = *men*

exclusively". Higher scores indicate gay orientation (scores of 4 or 5) and the questionnaires of participants who reported a score of 3 or below were excluded from the study.

Overweight preoccupation.

Overweight preoccupation was measured using the four-item Overweight Preoccupation subscale of The Multidimensional Body-Self Relations Questionnaire – Appearance Scales (MBSRQ-AS; Cash, 1990). Items assess the extent of worry about weight related issues (i.e. "I constantly worry about being or becoming fat") and are rated on a five point Likert scale (1= *definitely agree*, 5= *definitely disagree*). Higher mean scores indicate greater preoccupation with bodyweight and fat anxiety. Cash (2000) reported the internal consistency and test-retest reliability after one month for men to be .73 and .79 respectively. In the current study the Cronbach alpha coefficient was .73. The questionnaire has been used with gay men (Blashill & Vander Wal, 2010).

Muscular dissatisfaction.

Muscular dissatisfaction was measured using Kimmel and Mahalik's (2004) Masculine Body Ideal Distress Scale (MBIDS). The measure consists of eight socially desirable/muscular items on a four point Likert scale (i.e. "How distressing would it be for you if the following statements were true of your physical appearance?: Not having 'six pack' abdominal muscles"). Scores can range from 8 to 32 with higher scores indicating subscription to muscular body ideals and dissatisfaction with current muscular physique. The MBIDS is composed of one factor related to general muscular body dissatisfaction and greater conformity to traditional masculine norms. Internal consistency values for the scale are reported between .80 and .89 with gay men (Kimmel & Mahalik, 2004; Kimmel & Mahalik

2005). In the current study, the Cronbach alpha coefficient was .89. Convergent validity is supported with a reported correlation of $r = .23$, $p < .01$ with the Body Ideals Questionnaire developed by Cash and Syzmanski (1995; Kimmel & Mahalik, 2004).

Restricted eating.

Restricted eating was measured by the Restraint subscale from the 30-item 'Eating Disorder Examination Questionnaire' (EDE-Q; Fairburn & Beglin, 1994). The five items are rated on a 7-point Likert scale asking how many days during the previous month the participant restricted their consumption (i.e. "on how many of the last 28 days have you been deliberately trying to limit the amount of food you eat to influence your shape or weight?": 1= *no days*, 7= *every day*). The cut-off score of 5 or more indicates pathological dietary restriction (Penelo, Villarroel, Portell, & Raich, 2012). The Restraint subscale reported good reliability with a Cronbach coefficient of .84 in a sample of 85 men (Hospers & Jansen, 2005). In the current study the Cronbach alpha coefficient was .88.

Obligatory exercise.

Obligatory Exercise was examined using the 20-item Obligatory Exercise Questionnaire (OEQ; Thompson & Pasman, 1991) Items are rated on a 4-point Likert scale (i.e. "When I don't exercise I feel guilty": 1= *never*, 4= *always*) to produce a total score with two items reverse keyed. The measure has been used with both men and women. Higher scores indicate greater fixation regarding exercise, negative affect associated with avoiding exercise, and exercise as a compensatory measure for perceived overeating. A score of 50 or more indicates exercise dependence (Matheson & Crawford-Wright, 2000). Pasman and Thompson (1988) reported internal reliability of .96 using a sample of 90 participants and a two week test-retest

reliability of .96. The Cronbach alpha coefficient in the current study was .86.

Concurrent validity was established with the Exercise Addiction Inventory ($r = .80$; Terry, Szabo, & Griffiths, 2004).

Depression.

Depression was assessed by the Kessler Psychological Distress Scale (K-10; Kessler et al., 2002). Items are rated on a 5-point Likert scale (i.e. “About how often did you feel hopeless?”: 1= *none of the time*, 5= *all of the time*). Scores are summed to provide a global measure of distress based on symptoms experienced in the previous four weeks. Scores between 20 and 24 indicate mild depression; scores between 25 and 29 indicate moderate depressive symptoms, while scores above 30 indicate high levels of depressive symptoms (Andrews & Slade, 2001). Reliability has been established in the literature and reports an internal consistency of between .74 and .84 (Grande, Taylor, & Wilson, 2000; Hides et al., 2007). The Cronbach alpha coefficient for the K-10 in the current study was .91. Divergent validity from measures of physical or general health was established by Andrews and Slade (2001) comparing the K-10 to the SF-12 (Short Form Health Survey; Ware, Kosinski and Keller, 1996; $r = -.06$) and the GHQ (General Health Questionnaire; Goldberg, 1972; $r = .05$).

Involvement in the gay community.

The 8-item Identification and Involvement with the Gay Community Scale (IIGCS; Stokes, McKirnan, & Burzette, 1993; Vanable, McKirnan, & Stokes, 1998) was used to measure gay community involvement. The scale consists of items relating to attitudes towards sexuality and community involvement (four items: i.e. ‘being attracted to men is important to my sense of who I am’), the frequency of participating in gay community activities (three items: i.e. ‘how often do you go to a gay bar?’) and number of gay friendships (one item: ‘about how many gay men

would you call personal friends as opposed to acquaintances?’). Higher scores indicate greater involvement with the gay community. Test-retest reliability was reported by Vanable et al., in a sample 218 gay men with a Cronbach alpha coefficient of .74 after one year. The Cronbach alpha coefficient in the current study was .75. It has a strong positive correlation with the Kinsey ratings of sexual orientation ($r = .58, p < .01$; Kinsey, Pomeroy, & Martins, 1948) suggesting that men involved with the gay community are likely to report being gay themselves (Venable et al., 1998). Similarly, construct validity is suggested by findings that men with higher IIGCS scores are more likely to report being “out” to others, less homophobic, and that their social circle was accepting of their homosexuality and were more likely to attend gay bars socially ($r = .53, -.35, .56$ and $.47$ respectively; Venable et al., 1998).

Exposure to gay media.

The Exposure to Gay Media Questionnaire (EGMQ; Appendix A) was devised for use in this study based on questionnaires and findings of previous research and reviews (Duggan & McCreary, 2004; Labre, 2005; Philaretou, Mahfouz & Allen, 2005; Saucier & Caron, 2008; Schooler & Ward, 2006; Taylor & Goodfriend, 2008; Weber, 2006). The EGMQ consists of 6 items which relate to reported extent of daily exposure to specific media such as gay magazines (‘on how many days during the last month have you read a gay magazine or newspaper?’), literature (‘on how many days during the last month have you read a book with gay and lesbian themes?’), pornography and internet sites. Each item is measured on a 5-point Likert scale indicating how many days a week a participant was exposed to gay related media within the previous month (1 = *no days*, 5 = *21 days-everyday*). Higher total scores

indicate greater exposure to gay community media. An exploratory factor analysis was performed to determine the factor structure of the scale (see Results).

Procedure

The questionnaire was uploaded onto the internet and hosted by an internet site that specialises in electronic survey and data collection. Online data collection was deemed appropriate as research has indicated it is the most effective means of accessing minority populations, some of whom may not feel comfortable revealing their sexual orientation to researchers face-to-face (Meyer & Wilson, 2009; Moradi, Mohr, Worthington, & Fassinger, 2009; Riggle, Rostosky, & Reedy, 2005).

Eighty-two gay related organisations or groups (i.e. social, political, support and tertiary) in Australia, United Kingdom, and the United States were contacted via email and invited to participate in the study through an online link to the questionnaire. A link to the study was also posted on the website of a gay media publisher. The questionnaire webpage invited same-sex attracted male participants to complete a questionnaire that examined the 'health behaviours of gay men'. The information and consent pages were presented online. Participants were informed that their responses would remain anonymous, participation was voluntary, and participants were provided with contact details of gay community and telephone counselling support services in the unlikely event that participation lead to distress.

Participants who read and understood the nature of the study and consented to participating were able to click on a button at the end of the page to begin the questionnaire. To reduce missing item responses, answers were mandatory for all questions before participants were able to continue to the next page. A total of 352 survey responses were examined and 85 incomplete questionnaires were identified and deleted. Two female participants, four bisexual participants (rating below 4 on the

sexual orientation measure) and one 'predominantly heterosexual' participant were eliminated resulting in a final sample of 260 adult gay men.

Results

Prior to the conduct of the path analysis to test the proposed model, an exploratory factor analysis was conducted for the experimenter derived Exposure to Gay Media Questionnaire.

Exploratory Factor Analysis of the Exposure to Gay Media Questionnaire

Factor analysis involves determining suitability of the data, factor extraction, and factor rotation which allows the factor solution to be more readily interpreted. In determining the suitability of the data, the minimum sample size is described as between 150-200 cases (Coakes & Steed, 2003; Tabachnick & Fidell, 2007). Six items contributing to the EGMQ were examined using SPSS version 17 (2008). The 5% trimmed mean was used to detect outliers (Pallant, 2005; Tabachnick & Fidell, 2007). The 5% trimmed mean is calculated from the data in which the top and bottom 5% of cases are removed to calculate a new mean that indicates whether outliers are overtly influencing results. A difference between the mean and trimmed mean $>.2$ suggests the presence of an outlier (Pallant, 2005). The differences between the mean and 5% trimmed mean was small (Literature = .12, Film = .05, Radio = .16, Pornography = .03, Internet = .01, Magazines = .11) indicating outliers were unlikely to be influencing results.

Skewness and kurtosis values were examined and converted into standard scores to determine whether items deviated from normality. A skewed variable has a non-centred mean within the distribution while kurtosis relates to the 'peakedness' of a distribution (i.e. a distribution that is too peaked with short tails or too flat with long tails). A normal distribution would produce skewness and kurtosis values of zero. A standard score (the skewness or kurtosis score divided by its standard error) demonstrates whether the item significantly deviates from normality (i.e. ± 3.29).

Literature, Film, Radio, and Magazines were found to be significantly positively skewed. Literature, Radio, Pornography, Internet and Magazines were significantly positively and negatively kurtotic. Although kurtosis may result in an underestimate of variance, samples with more than 200 cases (such as the current study) are less sensitive to variations in skewness and kurtosis (Tabachnick & Fidell, 2007). An inspection of the distribution also revealed items to deviate from normality. To reduce the influence of the non-normal distribution, the EFA was conducted using Mplus (version 6; Muthen & Muthen, 2010) utilising the robust weighted least-squares procedure with mean and variance adjustment (WLSMV). The final sample for the EFA consisted of 260 participants.

An EFA was used to determine the structure of the six ordinal items measuring Exposure to Gay Media. Ordinal correlations between EGMS items are shown in Table 1. Table 1 shows medium effects between Literature and Film, Literature and Magazines, Film and Magazines, and Radio and Magazines. Small effects existed between Film and Pornography, Pornography and Internet, and Pornography and Magazines

Table 1.

Ordinal Correlations Between Exposure to Gay Literature, Film, Radio, Pornography, Internet, and Magazines (N=260).

	Film	Radio	Pornography	Internet	Magazines
Literature	.47*	.16	.10	.06	.43*
Film		.08	.23*	.07	.48*
Radio			-.04	-.07	.33*
Pornography				.29*	.22*
Internet					.04

* $p < .01$.

Results of the EFA were interpreted by examining the number of eigenvalues greater than unity and the extent to which media items load strongly on each factor with oblique rotation. The EFA revealed the presence of two factors with eigenvalues exceeding one suggesting that a two factor model may be appropriate. This was confirmed by the results of parallel analysis (Watkins, 2000), which suggested that a maximum of two factors could reliably be extracted.

Additionally, a chi-square test of model fit ($\chi^2 = 9.42$, $df = 4$ $p = .05$) was not significant indicating the two factor model fit the data. Model fit was also established by three practical indices; the comparative fit index (CFI; Bentler, 1990), root mean square error of approximation (RMSEA; Steiger, 1990), and the standardised root mean square residual statistic (SRMR). With fewer than 500 cases, CFI values between .90 and .95 indicate acceptable fit while values above .95 indicate good fit (Weston & Gore, 2006). RMSEA values between .05 and .08 are considered moderate fit and values $< .05$ are considered good fit (Browne & Cudeck, 1993; Hu & Benler, 1999). SRMR values of zero suggest perfect fit and values less than .08 indicate

acceptable fit (Hu & Bentler, 1999). Inspection of the CFI = .97, RMSEA = .07, and SRMR = .04 indices indicated good-to-acceptable fit for a two-factor model of these items.

To aid the interpretation of the two components, an oblique rotation using the Oblimin procedure was undertaken. The rotated solution is shown in Table 2. Field (2009) indicates that statistically significant factor loadings ($p = .01$) for samples between 200 and 300 should be between .36 and .30 respectively. Therefore, significant factor loadings greater than .30 were examined for appropriateness in the EFA.

Table 2.

Item Loadings for the Two Factor Solution Using Oblimin Rotation

Item	General Media Outlets	Sexualised Media Outlets
Literature	.63	-.02
Film	.64	.11
Radio	.38	-.23
Pornography	.07	.63
Internet	-.08	.47
Magazines	.74	-.01

Note. Bold indicates loading >.30

As shown in Table 2, Literature, Film, and Magazines moderately load, while Radio weakly loads on the first factor which can be conceived as ‘General Media Outlets’. Pornography and Internet load on the second factor which can be

conceptualised as ‘Sexualised Media Outlets’. The correlation between Factor 1 and Factor 2 was .31 indicating each component is measuring a distinct media construct.

A second EFA was attempted using the General Media Outlets component incorporating Literature, Film and Magazines items (as shown in Table 3). Radio was excluded from the model as, although it loaded slightly higher than the minimum requirement, it did not load strongly on either factor and did not relate to the General Media Outlet factor due to being a non-visual media (unlike Literature, Film and Magazines). Due to the number of parameters model fit was not established.

Table 3.

Item Loadings for the One Factor Solution Using Oblimin Rotation

Item	Media
Literature	.64
Film	.73
Magazines	.66

Note. Bold indicates loading >.30

The items shown in Table 3 were subsequently used to measure gay media exposure in the path analysis while the Sexualised Media Outlet subscale was not included due to having only two items and being unstable. To obtain confidence in the construct reliability of the Media subscale, the three items were tested for internal consistency. Cronbach alpha levels ranging from .6 to .7 are considered acceptable while values higher than .7 are considered to be good indicators of reliability (Sharma, 1996). The Cronbach alpha coefficient was .64 indicating acceptable internal consistency. As alpha levels are inflated by increasing the number of items,

this result was deemed appropriate for a small three item scale (Green, Lissitz, & Mulaik, 1977).

Path Analysis

Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, Restricted Eating, and Obligatory Exercise were examined for outliers and normality. The 5% trimmed mean was used to detect outliers (Pallant, 2005). The differences between the mean and 5% trimmed mean (Restricted Eating = .09, Involvement in the Gay Community = -.002, Muscular Dissatisfaction = .18, Obligatory Exercise = .25, Overweight Preoccupation = .02, Depression = .51, Exposure to Gay Media = .19) showed outliers did not greatly influence variable scores other than Obligatory Exercise and Depression which showed a difference >2 . To investigate further, Z-scores for each participant were computed (Tabachnick & Fidell, 2007). Z-scores that exceed ± 3.29 at $p < 0.01$, two-tailed, suggest the presence of multivariate outliers (Tabachnick & Fidell). Results showed four cases with Z-scores exceeding ± 3.29 which were removed from the data. Mahalanobis distances were examined and revealed no score above the critical value of 22.46 ($df=6$, $p < .001$). The final sample included 256 cases for path analysis. Descriptives, possible minimum and maximum scores, and skewness and kurtosis values were obtained for each variable and are reported in Table 4.

Table 4.

Descriptives, Possible Range of Scores and Skewness and Kurtosis Values for Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, Restricted Eating, and Obligatory Exercise (N = 256)

Variable	<i>M</i>	<i>SD</i>	Min Score	Max Score	Skewness	Kurtosis
Involvement	2.82	.73	1	5	.03	-.33
Media	5.31	2.03	3	15	1.19	1.18
Overweight Preoccupation	2.60	.98	1	5	.26	-.61
Muscular Dissatisfaction	17.75	5.44	8	32	.53	-.33
Depression	20.42	7.36	10	50	.75	-.07
Restricted Eating	2.83	1.71	1	7	.54	-.95
Obligatory Exercise	38.78	8.74	20	80	.34	-.34

As shown in Table 4, participants were occasionally involved in the gay community and were exposed to a range of gay community media on average between 5 and 6 days in the previous month. The mean score for Overweight Preoccupation and Muscular Dissatisfaction shows participants were not overly concerned with bodyweight but were relatively concerned with muscularity. On average, participants described having mild depressive symptoms while participants restricted their dietary intake between 5 and 6 days in the previous month. Participants showed a tendency to engage in mild-to-moderate levels of obligatory exercise. For Restricted Eating, 17.57% of men scored above the cut-off indicating the presence of eating disorder symptoms; for Obligatory Exercise, 12.5% scored above 50 indicating exercise dependence; for depression, 12.89% scored above 30 indicating severe depressive symptoms.

Table 4 shows the levels of skewness and kurtosis for each variable. Standard scores were obtained using the standard error of skewness (.15) and kurtosis (.30). Results indicated Restricted Eating, Muscular Dissatisfaction, Depression and Exposure to Gay Media were positively skewed while Exposure to Gay Media was significantly positively kurtotic. An inspection of the Kolmogorov-Smirnov statistic showed each variable significantly deviated from normality which is also common in larger samples (Tabachnick & Fidell, 2007). However, non-normality in several variables was expected: measures such as the K-10 (Depression) or the Restraint Scale are unlikely to conform to normal distribution as participants were not expected to exhibit moderate to severe dietary restriction and depressive symptoms. As such, the path analysis used the robust maximum likelihood (MLR) statistic to account for non-normality. Pearson correlations between observed continuous variables are shown in Table 5.

Table 5.

Pearson Correlations between Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscle Dissatisfaction, Depression, Restricted Eating and Obligatory Exercise

Variable	Media	Overweight Preoccupation	Muscle Dissatisfaction	Depression	Restricted Eating	Obligatory Exercise
Involvement	.40**	.00	.06	-.20**	.10	.09
Gay Media		.17**	-.02	.08	.14*	.06
Overweight Preoccupation			.33**	.28**	.67**	.36**
Muscle Dissatisfaction				.25**	.23**	.52**
Depression					.08	.08
Restricted Eating						.39**

* $p < .05$. ** $p < .01$.

Pearson correlations were interpreted in concordance with Cohen's magnitude of effect size (small effect: $r = .10$; medium effect: $r = .30$; large effect: $r = .50$ or greater; Cohen, 1992). As shown in Table 5, large magnitude correlations exist between Overweight Preoccupation and Restricted Eating, and Muscular Dissatisfaction and Obligatory Exercise. Medium magnitude relationships exist between Involvement and Media, Overweight Preoccupation and Muscular Dissatisfaction, Overweight Preoccupation and Obligatory Exercise, and Restricted Eating and Obligatory Exercise. Significant but small magnitude relationships were apparent between Media and Overweight Preoccupation, Media and Restricted Eating, Overweight Preoccupation and Depression, Muscular Dissatisfaction and Depression and Muscular Dissatisfaction and Restricted Eating. An inverse, small magnitude correlation was shown between Involvement and Depression. Table 5 indicates multicollinearity was not apparent (two or more highly correlated predictor variables; Tabachnick & Fidell, 2007).

The path model (see Figure 2) was run examining the standardised direct paths between observed variables in concordance with prior research in Mplus version 6. Direct paths were not estimated in the model if empirical or theoretical literature did not support its inclusion. The Chi-square was non-significant; $\chi^2 = 15.04$, $df = 9$, $p = .09$. The model indicated good fit according to fit indices; CFI = .98, TLI = .96, RMSEA = .05 (90% CI: .00-.09), SRMR = .03. The model accounted for a substantial amount of variance in the two key dependent variables: Restricted Eating (46%) and Obligatory Exercise (35%), as well as 16% of the variance in Exposure to Gay Media, 15% of the variance in Depression, 12% of the variance in Muscular Dissatisfaction, and 3% of the variance in Overweight Preoccupation. Standardised path coefficients are demonstrated in Figure 2. Dashed lines indicate non-significant paths.

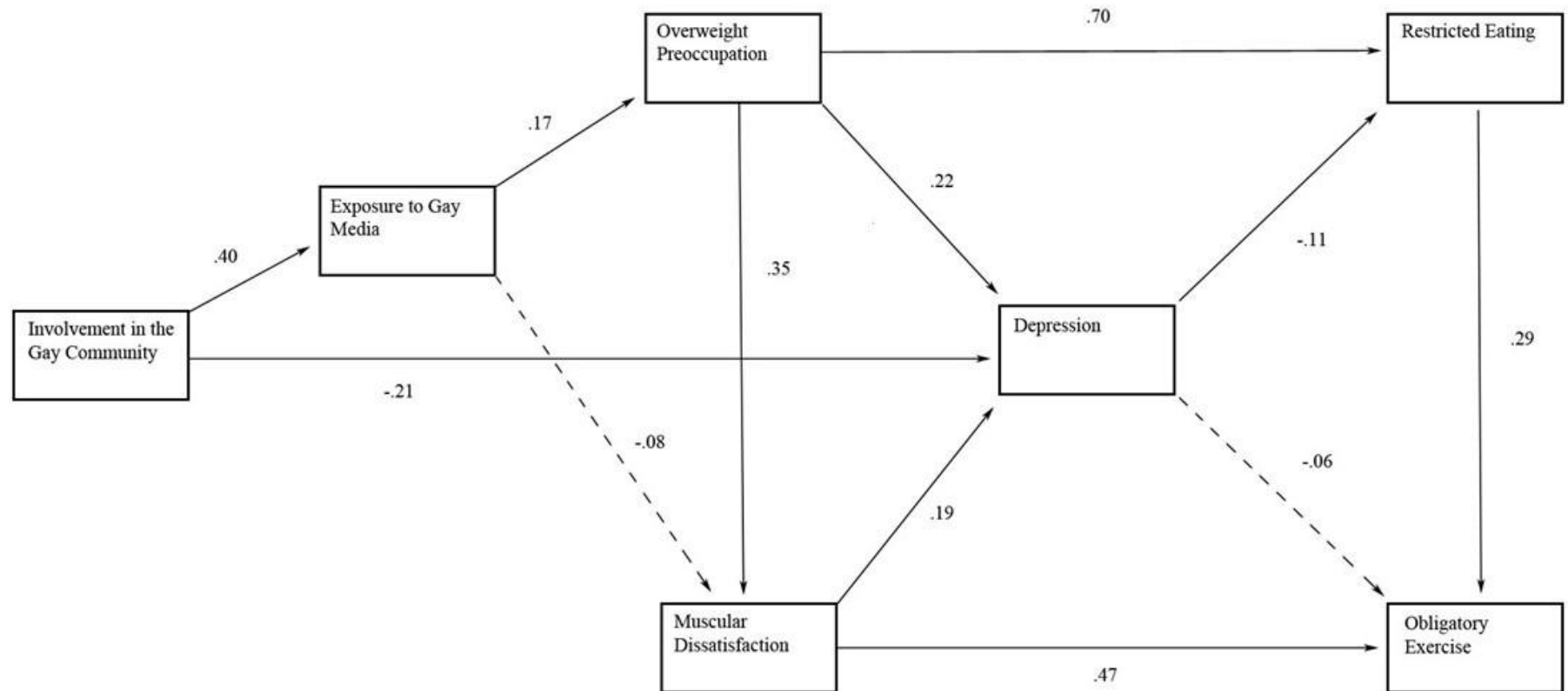


Figure 2. Path-analytic model: Direct relationships between involvement in the gay community, exposure to gay media, overweight preoccupation and muscular dissatisfaction, depression, restricted eating and obligatory exercise.

As seen in Figure 2, most of the standardised path coefficients tested were significant with the exception being direct paths from Exposure to Gay Media to Muscular Dissatisfaction, and Depression to Obligatory Exercise. Figure 2 shows that Involvement in the Gay Community was positively linked to Exposure to Gay Media indicating a medium effect ($\beta = .40$, $SE = .05$). Exposure to Gay Media, in turn, was linked to Overweight Preoccupation with a small effect ($\beta = .17$, $SE = .06$) but not with Muscular Dissatisfaction. Overweight Preoccupation was positively linked to Muscular Dissatisfaction producing a medium effect ($\beta = .35$, $SE = .05$), to Depression with a small effect ($\beta = .22$, $SE = .06$), and to Restricted Eating with a large effect ($\beta = .70$, $SE = .04$). Muscular Dissatisfaction was positively linked to Depression with a small effect ($\beta = .19$, $SE = .06$) and linked to Obligatory Exercise producing a medium effect ($\beta = .47$, $SE = .05$). Depression was negatively linked to Restricted Eating with a small effect ($\beta = -.11$, $SE = .05$) but not Obligatory Exercise. Restricted Eating was linked to Obligatory Exercise with a small effect ($\beta = .29$, $SE = .05$). No modification indices were suggested for model improvement.

Standard Multiple Regression Analyses with Younger and Older Gay Men

To determine whether the influence of Restricted Eating and Obligatory Exercise predictors varied across groups based on age, a standard multiple regression procedure was used. SEM was deemed inappropriate because the overall sample was divided into groups based on age, thereby reducing its power to detect effects. Power analysis to adequately run a multiple regression with six predictors was met for no more than two groups. The data were split into two categories based on the median age of participants: Younger Men and Older Men. One-hundred-and-thirty men aged ≤ 31 years were included in the Younger category while 126 men aged ≥ 32 years

were included in the Older Men category. This division in age was deemed appropriate as a result of gay men perceiving middle-age beginning in their early 30's, unlike their heterosexual counterparts, and which authors have termed *accelerated ageing* (Bennett & Thompson, 1991; Kelly, 1977, 1980).

Two standard multiple regression models were conducted with Restricted Eating being regressed on Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, and Obligatory Exercise (Model 1) and Obligatory Exercise being regressed on Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, and Restricted Eating (Model 2). Both Model 1 and Model 2 were produced with Younger Men and Older Men.

Model 1: Predicting restricted eating.

Tolerance and Variance Inflation Factor (VIF) values were inspected. Tolerance and VIF values of $<.10$ and >10 , respectively, indicate the presence of multicollinearity (Tabachnick & Fidell, 2007). Along with an inspection of the correlation matrix, results showed multicollinearity was not present. Inspection of the Normal Probability Plot showed no substantial deviations from normality. Examination of Mahalanobis distance showed no extreme values above the critical value using the .001 alpha level and Cook's Distance of <1.0 , indicating outliers were unlikely influencing results (Tabachnick & Fidell). The mean age was calculated for the Younger Men ($M = 24.61$ years, $SD = 3.65$ years), and Older Men ($M = 45.68$ years, $SD = 9.96$ years). A t -test (equal variances not assumed) showed a significant difference between the mean age of Younger and Older men; $t(157.14) = -22.34$, $p < .001$.

For Younger Men, the regression model was shown to significantly differ from zero, $F(6,123) = 20.86, p < .001$. An adjusted $R^2 = .48$ demonstrated the contribution of 48% of the variance in Restricted Eating by the predictors; Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, and Obligatory Exercise.

For Older men, the regression model was also significantly different from zero $F(6, 119) = 19.53, p < .001$. An adjusted $R^2 = .47$ showed predictors contributed 47% of the variance in Restricted Eating in older gay men. To determine unique contributions by variables in the Model 1, unstandardised and standardised beta values, standard error and semipartial correlation coefficients were observed as shown in Table 6 for both groups.

Table 6.

*Unstandardised and Standardised Beta Values for Restricted Eating Predictors**(Model 1)*

Predictors	<i>b</i> (Std Error)		β	
	Younger	Older	Younger	Older
Involvement	.20 (.19)	.10 (.17)	.08	.04
Gay Media	-.02 (.06)	.01 (.06)	-.02	.01
Overweight Preoccupation	1.10**(.12)	1.08**(.14)	.67**	.59**
Muscular Dissatisfaction	-.03 (.02)	-.01 (.03)	-.11	-.03
Depression	.00 (.02)	-.03* (.02)	.02	-.15*
Obligatory Exercise	.03* (.01)	.05**(.02)	.16*	.26**

* $p < .05$. ** $p < .01$.

As shown in Table 6, Overweight Preoccupation significantly contributed the most to explaining Restricted Eating in Younger Men when the variance for all other variables was controlled. The squared semipartial correlation coefficient indicated Overweight Preoccupation contributed 36% of the variance in Restricted Eating. Similarly, Obligatory Exercise contributed 2% of the variance in Restricted Eating in Younger Men. This indicated that bodyweight concerns in younger gay men predict dietary restriction and that unhealthy exercise behaviours also predict dietary restriction, albeit to a much lesser extent.

Overweight Preoccupation uniquely contributed 24% of the variance in Restricted Eating in Older Men; Obligatory Exercise contributed 4% of the variance, and Depression 2% of the variance. Results indicate that weight consciousness was

the biggest predictor of dietary restriction in Older Men while Depression and Obligatory Exercise uniquely contributed significantly small amounts.

Predictors contributed similar amounts of variance in predicting the outcome measures for both Younger and Older men with no significant difference when converting unique predictors' beta values into Z values and comparing between groups. Results indicate that overweight preoccupation was the biggest predictor of eating restriction in both older and younger gay men.

Model 2: Predicting obligatory exercise.

For Young Men, the regression model was shown to significantly differ from zero, $F(6,123) = 7.10, p < .001$. An adjusted $R^2 = .22$ demonstrated the contribution of 22% of the variance in Obligatory Exercise by the predictors: Involvement in the Gay Community, Exposure to Gay Media, Overweight Preoccupation, Muscular Dissatisfaction, Depression, and Restricted Eating.

For Older Men the regression analysis was significantly different from zero $F(6, 119) = 21.11, p < .001$. An adjusted $R^2 = .49$ indicated the predictors contributed 49% of the variance in Obligatory Exercise in older gay men. To determine unique contributions by variables in the Model 2, unstandardised and standardised beta values, standard error and semipartial correlation coefficients were observed as shown in Table 7 for both groups.

Table 7.

*Unstandardised and Standardised Beta Values for Obligatory Exercise Predictors
(Model 2)*

Predictors	<i>b</i> (Std Error)		β	
	Younger	Older	Younger	Older
Involvement	1.37 (1.22)	-.11 (.82)	.10	-.01
Gay Media	-.07 (.40)	.23 (.30)	-.01	.06
Overweight Preoccupation	.14 (1.01)	.96 (.83)	.02	.12
Muscular Dissatisfaction	.59** (.13)	.87** (.12)	.38**	.53**
Depression	-.22* (.11)	.00 (.08)	-.17*	.00
Restricted Eating	1.26* (.58)	1.24* (.43)	.24*	.25*

* $p < .05$. ** $p < .01$.

Table 7 shows Muscular Dissatisfaction was the strongest contributing factor to explaining the variance in Obligatory Exercise for Younger Men when all other variables were controlled. The squared semipartial correlation coefficient demonstrated a contribution of 12% of the variance in Obligatory Exercise by Muscular Dissatisfaction, 3% by Restricted Eating, and 3% by Depression. Results suggested that dissatisfaction with muscle tone predicted over-exercise behaviours along with dietary restriction levels. Low levels of depression also minimally predicted obligatory exercise behaviours. The findings demonstrated that:

- Muscular Dissatisfaction uniquely contributed 22% of the variance in obligatory exercise for older men.
- Restricted Eating contributed 4% of the variance in obligatory exercise for older men.

- Older and younger gay men who were dissatisfied with muscle tone were likely to engage in over exercise behaviours.
- There was no significant difference in the magnitude of predictors between younger and older men when transforming beta values into z-scores and comparing across groups.
- Depression was not a unique predictor of obligatory exercise for older men.

Discussion

The primary purpose of this study was to investigate the relationship between aspects of gay culture and body image related variables in gay men. A small body of quantitative research has indicated that there is little to no direct relationship between reported extent of gay community involvement, body image concerns and eating disorder diagnoses (Feldman & Meyer, 2007; Kane, 2010; Levesque, & Vichesky, 2006; Tiggemann, Martins & Kirkbride 2007; Wrench & Knapp, 2008). The current study aimed to examine factors beyond mere identification or reported immersion in the gay community. It assessed factors gay men may experience as part of their engagement with the culture of the gay community (such as exposure to sexualised gay media and how that might relate to body image concerns). The study also extended current research about gay community involvement by assessing how it may relate to body image concerns and depression. Whilst there has been some previous research examining media exposure and body image in gay men, to our knowledge, this is the first study to also investigate two appearance or compensatory related behaviours in gay men: restricted eating and obligatory exercise.

The patterns of results suggested a relationship between gay media and weight concerns. Obligatory exercise and restricted eating shared relationships with muscular dissatisfaction and overweight preoccupation respectively. The results supported most hypotheses: the exceptions being Hypothesis 3, Hypothesis 6 and Hypothesis 11. As predicted, there was a moderately strong relationship between involvement in the gay community and gay media exposure (Hypothesis 1). Exposure to sexualised gay specific media was significantly related to overweight preoccupation (Hypothesis 2) but not to muscular dissatisfaction (Hypothesis 3). Overweight preoccupation and muscular dissatisfaction predicted higher levels of depressive symptoms (Hypothesis

4). Involvement in the gay community was related to a decrease in depressive symptoms (Hypothesis 5) while depression was unrelated to obligatory exercise (Hypothesis 6) but related to unrestricted eating (Hypothesis 7). The expectation that overweight preoccupation would predict restricted eating and that muscular dissatisfaction would increase levels of obligatory exercise was supported (Hypothesis 8 and 9). Restricted eating predicted obligatory exercise behaviour (Hypothesis 10). Hypothesis 11 was not supported; there were no significant differences between older and younger age groups when examining predictors of restricted eating and obligatory exercise.

Involvement in the Gay Community and Depression

The results suggested that a higher level of enmeshment in the gay community was associated with a reduction in reported depressive symptoms. The result is consistent with findings from several studies have shown that close relationships and associations with same-sex attracted peers can positively influence the behaviour and areas of wellbeing of gay men (Fergus, Lewis, Darbes, & Kral, 2009; Masini & Barrett, 2007; Smith, Grierson, Wain, Pitts, & Pattison, 2006; Vincke & van Heeringen, 2004). Researchers have speculated that these patterns of findings may result because the gay community may act as a sanctuary whereby an association with peers reduces stigma and depressive symptoms by normalising being gay (Vincke & van Heeringen, 2004). Recent research has shown that participation in the gay community can influence a sense of belonging whereby stigma and susceptibility to psychological distress is reduced (McLaren & Gibbs, 2012; McLaren et al., 2007; McLaren et al., 2008). It is possible the gay men in this study perceived a sense of belonging to the gay community. Alongside a supportive network, this may have

influenced the reduced rates of depression. Research into the sense of belonging within the gay community is still in its infancy and warrants further investigation.

Involvement in the Gay Community and Physical Appearance

The findings from the current study are different to those of Tiggemann, Martins and Kirkbride (2007) who found no direct association between gay community involvement and body image disturbance. Neither overweight preoccupation nor muscular dissatisfaction significantly correlated with community involvement in our regression models, however, gay community media was a predictor of overweight preoccupation in our path model. One possible explanation for the different findings was the inclusion of a specific gay media scale in this study. Another explanation may relate to the fact that there are many different sub-communities and cultures within the wider mainstream gay community. Each subculture appeals to differing body types and attitudes. This could allow individuals to participate in communities comprising of men with similar body shapes and experience a less judgemental niche (Gough & Flanders, 2009; Willoughby, Lai, Doty, Mackey & Malik, 2008). An example of this can be found in the 'bear' community where body hair and weight is celebrated (Gough & Flanders, 2009). Alternatively, it may be that like-minded social support derived from involvement in the gay community per se may be a protective buffer against self-objectification and dissatisfaction with physical appearance (Atkins, 1998; Cass, 1984). Furthermore, strong social support networks based on common interests, rather than appearance, may reduce pressure to conform to a certain physical standard.

Involvement in the Gay Community and Body Modification Behaviours

The current study found that involvement in the gay community was not a significant predictor of body modification outcomes (obligatory exercise or restricted

eating) when the sample was split into older and younger categories in our regression models. These results somewhat support Wrench and Knapp (2008) who found no linear relationship between appearance measures and involvement in the gay community but extend this research by examining problematic behaviours that may stem from body image concerns. Although both this study and Wrench and Knapp utilised the same measurement of gay community involvement, the present study improved on the methodology by retaining participants who rated themselves as either predominantly or exclusively attracted to men and eliminating bisexual men. Unlike Wrench and Knapp's study, this study extended its definition of gay community involvement by including a separate gay media measure which was related to weight concerns in the path model when examining the entire sample.

The current findings are inconsistent with that of Davids and Green (2011), whose study is one of the few studies that have found a significant relationship between gay community involvement and eating problems for gay men. Davids and Green found that gay community involvement was a unique predictor of eating disorder symptomatology with a small effect. Several factors may account for differences between their findings and that of the current study, including the way involvement in the gay community was conceptualised. In Davids and Green's study, it was defined by how much a man reportedly participated in the gay community as opposed to the current study which defined involvement on the basis of identification, a sense of belonging, and frequency of participation in gay community related activities. Secondly, the current study used a multiple regression model examining two age groups as opposed to the hierarchical regression model used by Davids and Green which included other factors such as self-esteem, gender orientation, and social comparison using a smaller sample of gay men. Finally, there was a difference in the

age of participants between studies. On average the participants in the current study were nine years older. The age of onset for eating disorders among gay men is often during early adulthood (Feldman & Meyer, 2010) and therefore participants in this study may have been less susceptible to eating problems as a result of being older. Davids and Green's findings showed that gay community involvement was significantly related to body dissatisfaction which is similar to our findings between gay media exposure and overweight preoccupation.

Feldman and Meyer's (2007) study found that gay community "connectedness" was related to fewer current eating disorders and concluded that gay community involvement may act as a protective factor preventing the development of clinical eating problems. The current findings in this study that involvement in the gay community is inversely related to depressive symptoms is also congruent with the notion that peers are influential in altering the behaviour and wellbeing of gay men via social support (Fergus, Lewis, Darbes, & Kral, 2009; Masini & Barrett, 2007; Smith, Grierson, Wain, Pitts, & Pattison, 2006; Vincke & van Heeringen, 2004).

Exposure to Gay Media and Body Image

Although the size of the effect between gay media and appraisal of physical appearance was small in our study, it is similar to that found by Barlett, Vowels, and Saucier (2008) in heterosexual men. The results suggest gay media exposure may influence aspects of body image that relate to weight concerns. Counter to predictions, there was no significant relationship between media exposure and muscular dissatisfaction. This may be because only one aspect of gay media exposure was assessed; new media (i.e. electronic media) was excluded from analysis. Gay men who access electronic media may search for specific muscular/athletic images that

appeal to them or join in online conversations with other gay men who are similarly attracted to a muscular appearance as reported by Campbell (2004).

Alternatively, overweight preoccupation was significantly related to muscular dissatisfaction suggesting that exposure to sexualised media shares a relationship with weight concerns which is also related to muscular concerns. This supports the notion that both gay and heterosexual men desire muscularity and trimness and are both important factors in body image conception (Abebe, Lien, Torgersen, & Von Soest, 2012; Furnham, Badmin, & Sneade, 2002).

Duggan and McCreary (2004) found that gay men exposed to gay pornography reported higher levels of physique anxiety but not drive for muscularity. The current study included questions pertaining to reading gay magazines which depict highly sexualised, almost naked gay men. These types of magazines and the images within them have been described as akin to pornography (Padva, 2002). The results of this study and Duggan and McCreary's research suggest that sexualised gay imagery of a pornographic nature may relate more to preoccupation with weight and appearance than muscular build. Duggan and McCreary also showed a relationship between fitness magazine exposure and both physique anxiety and drive for muscularity. The current study did not include questions relating to health and fitness media and thus other factors may be associated with feelings of muscular inadequacy.

Internalised homophobia, the subscription to rigid masculine gender-role norms, and the experience of gender-role conflict have been shown to influence muscular and body image concerns in gay men (Clarkson, 2006; Halkitis, Green & Wilton, 2004; Hamilton & Mahalik, 2009; Kimmel & Mahalik, 2005; Reilly & Rudd, 2006; Wiseman & Moradi, 2010). The desire to appear strong and masculine to reduce gender-role conflict and internalised homophobia may be more strongly

related to muscularity than the desire to appear attractive as perpetuated by images in the media. Kimmel and Mahalik (2005) found that internalised homophobia and stigma were predictors of muscular body image disturbance and that building a strong physique was considered by gay men to be the best way to avoid victimization.

Studies such as Taylor and Goodfriend's (2008) experimental study which measured media imagery and body satisfaction defined body image as a single construct related solely to bodyweight. If this is the case then it has implications for the current study because the types of muscular or thin images men were exposed to in Taylor and Goodfriend's study were not controlled. Despite this methodological difference, the current findings partly replicate Taylor and Goodfriend findings; media exposure was related to weight concerns but did not uniquely predict eating disorder symptoms. Taylor and Goodfriend found that gay media exposure only correlated with one of eight eating disorder subscales suggesting the relationship between media and eating concerns is small at best.

Wiseman and Moradi (2010) found that the internalization of cultural standards of attractiveness communicated by the media influenced perceptions of body image in gay men. Their results also indicated that internalised cultural standards of attractiveness did not directly predict eating disorder symptoms. The current study concurs with these findings; exposure to gay media influences a preoccupation with weight but was not a unique predictor of restricted eating in our regression models.

Past research has demonstrated the relevance of objectification theory to gay men and proposes that gay men are similar to heterosexual women in the way they self-objectify (Engeln-Maddox, Miller, & Doyle, 2011; Kozak, Frankenhauser, & Roberts, 2009; Martins, Tiggemann, & Kirkbride, 2007; Wiseman & Moradi, 2010).

Although this study found that gay media exposure was related to weight concerns, the magnitude of effect was small and suggests it may not be as dominant an influence on body image construction or self-objectification as has been hypothesised. Furthermore, for both younger and older men media exposure did not uniquely contribute to obligatory exercise or eating restriction. There may have been reduced power to detect an effect as most men in the study reported moderate satisfaction with their bodies. Sexualised images in the gay media may be more pronounced when examining rates of body image and problematic eating in clinical samples.

In the current study, the magnitude of effects between media exposure and overweight preoccupation was similar to effect sizes reported by Barlett, Vowels, and Saucier (2008) in their meta-analysis of media and body image in predominately heterosexual men. Although statistically small, this is consistent with the magnitude of effects for serious illnesses on people's mood (Meyer & Melvin, 1995). The magnitude of effect for media influence on body image, especially weight concern, is also similar, though slightly higher, for heterosexual women and media (Grabe et al., 2008). Gay men may be similar to heterosexual men in their susceptibility to images of trim bodies in the media.

In the current study, no relationship between sexualised television or printed imagery and muscle concerns was found. This result conflicts with the findings of two studies of heterosexual men (Hargreaves & Tiggemann, 2009; Hatoum and Belle, 2004) which found significant relationships between these variables. Differences in sample characteristics between the studies might explain the disparate result; the sample of gay men were older on average than the heterosexual men in these two studies. Younger men have been found to be more susceptible to media influence than older men (Peat, Peyerl, Ferraro, & Butler, 2011).

While the findings from this study show some similarities to those obtained with heterosexual men (Hargreaves & Tiggemann, 2009; Leit, Pope, & Gray, 2002; Peat, Peyerl, Ferraro, & Butler, 2011), the expected findings related to the effects of age were not found. For heterosexual men, media exposure has been shown to predict multiple indices of body image and age moderates the effect with young adult men more susceptible to media imagery depicting young, handsome, sexually attractive men than adolescents and older men (Barlett, Vowels, & Saucier, 2008; Peat, Peyerl, Ferraro, & Butler, 2011). In the current study, gay media exposure did not significantly predict body modification outcomes for younger or older men and the effect of body image concerns on obligatory exercise and restricted eating did not differ between the age groups. An explanation for the disparity between the current findings and prior research is that the present study examined only two broad age categories of 'younger' or 'older' as opposed to categories representing key maturation points across the lifespan. Results may have differed if men were divided into multiple age groups (i.e. men in their 20's, 30's, middle age, and elderly men) as young adult men have shown higher susceptibility to media imagery (Peat, Peyerl, Ferraro, & Butler, 2011).

A second explanation for the failure to find a difference between young and older men in our study is that the general mainstream media may be more influential on heterosexual men's body image because it is constantly depicted on billboards, newspapers, television, the internet and magazines. Gay community media, on the other hand, is a niche market and does not overly saturate the mainstream media so gay men may experience less exposure to this type of homoerotic sexualised media.

Notwithstanding this caveat, the findings from this study and prior research suggest that the impact of gay community media on body image disturbance is noteworthy but should not be overstated.

Restricted Eating as a Method of Weight Control for Gay Men

In contrast to the small effect between gay community media and overweight preoccupation, there was a very strong association between overweight preoccupation and restricted eating. This suggests that eating restriction as a form of weight control is of particular concern to gay men experiencing body image disturbance. The findings of this study are consistent with many studies in the literature that report strong relationships between weight concerns and eating disorder symptomatology in gay men (Boisvert & Harrell, 2009; Bosley, 2011; Carlat, Camargo, & Herzog, 1997; Feldman & Meyer, 2007; Feldman, Torino, & Swift, 2011; Herzog, Norman, Gordon, & PePOSE 1984; Jones & Morgan, 2010; Olivardia, Pope, Mangweth, & Hudson, 1995; Russell & Keel, 2002; Siconolfi, Halkitis, Allomong, & Burton, 2009; Strong, Williamson, Netemeyer, & Geer, 2000; Williamson & Hartley, 1998; Williamson & Spence, 2001) and that like heterosexual women, gay men often display greater susceptibility to body image disturbance and eating control than heterosexual men (Beren, Hayden, Wilfley, & Grillo, 1996; Morrison, Morrison, & Sager, 2004; Russell & Keel, 2002).

The current findings that higher levels of depressive symptoms are associated with unrestricted eating is the opposite to that reported by Blashill and Vander Wal (2009). This may be due to differences between the studies in measurement methods: Blashill and Vander Wal (2009) used the Center for Epidemiologic Studies Depression Scale and full EDE-Q measurement including weight and shape concerns whereas this study used the Restraint subscale solely. Although Blashill and Vander

Wal used a different model examining negative affect as a mediator of gender-role conflict and eating disorder symptoms, negative affect was predictive of eating disorder symptoms. The current results are perhaps unsurprising because restrained eaters have shown to increase consumption during periods of dysphoric mood in women (Cooper & Bowskill, 1986; Masheb & Grilo, 2006; Ruderman, 1985). How this relates to gay men is currently unknown and warrants further investigation. Another explanation refers to causality; depression may not precede eating disorder pathology but act as an outcome, or a second order unmeasured factor may account for the findings. Depression and eating disorder symptoms may even share a reciprocal relationship in which changes in one influence the other (Stice, 1998; Stice & Agras, 2000; Stice, Hayward, Cameron, Killen, & Taylor, 2000).

The current results suggest that factors associated with being homosexual such as involvement in the gay community and gay media exposure are not directly or strongly associated with high levels of eating disturbance. This is inconsistent with Russell and Keel (2002) who found that homosexual orientation explained a significant proportion of variance in body image dissatisfaction and eating pathology after having controlled for self-esteem, depression and acceptance of sexuality. Differences in the level of eating pathology are not likely to account for this anomaly. Although gay men in this study did not engage in restricted eating on an ongoing basis, approximately 17% of gay men scored above the cut-off for eating restriction suggesting the presence of an eating disorder. Russell and Keel used the Eating Attitudes Test, a comprehensive assessment of eating pathology, and reported approximately 21% meeting criteria for anorexia nervosa. The distinction between Russell and Keel's findings and the current study was their aim to compare gay and

heterosexual men to determine if same-sex attraction was more closely related to eating disorder symptoms than in heterosexual men.

The levels of eating restriction in the current sample are consistent with that reported by Hospers and Jansen (2005) who found eating disorder symptoms, on average, fell within the normal range. However, the current study was not designed to assess diagnostic criteria for the presence of eating disorders. It is therefore not possible to compare the results to studies that have reported prevalence rates between 20%-33% (Andersen, 1999; Carlat, Camargo, & Herzog, 1997; Gettelman & Thompson, 1993; Strong, Singh, & Randall, 2000; Strong, Williamson, Netemeyer, & Greer, 2000).

Overall results suggest that, similar to what has been found in heterosexual samples (Muisse, Stein, & Arbess, 2003), there is an association between eating restriction and preoccupation with controlling weight for gay men. In this sample, the finding holds true for men below and above 31 years of age.

Obligatory Exercise as a Method of Weight Control and Increasing Muscularity

Results indicate a moderately strong relationship between muscular dissatisfaction and obligatory exercise. This is the first known study to examine obligatory exercise in gay men to find that dietary restriction and obsessive exercise are related forms of weight/muscle manipulation for this population. This pattern of results has also been found in heterosexual men who strive to attain hyper-muscular, trim physiques (Esco, Olson, & Willford, 2005; Goldfield, Blouin, & Woodside, 2006; Hallsworth, Wade, & Tiggemann, 2005). Contrary to Hypothesis 6, no direct relationship between depression and obligatory exercise was apparent. This may be because the participants reported low levels of depression in the sample.

These findings contrast with Zamboni, Crawford and Carrico's (2008) study which found body image concerns were associated with exercise amotivation in gay men. This present study found the opposite; gay men's increased concerns about muscularity were associated with over-exercise and to increased feelings of remorse if they missed exercising. The most likely explanation for the discrepant results is that the studies measured different facets of exercise. Zamboni et al., measured exercise motivation such as extrinsic and intrinsic motivation whereas the current study examined the extent to which gay men reported engaging in problematic exercise and experienced guilt for missing exercise sessions. Zamboni et al., concluded gay and bisexual men may experience a positive body image even if they don't exercise solely to improve their physical appearance. This may not be the case when engaging in obligatory exercise. Gay men who engage in obligatory exercise to achieve a muscular physique may not experience greater body satisfaction; the guilt associated with missing training and thoughts relating to not exercising enough to maintain a muscular physique are unlikely to result in improved body image.

A similar study found that gay men are more likely to be motivated to exercise to improve physique and are more concerned with aesthetic appearance than heterosexual men (Grogan, Connor, & Smithson, 2006). The current study demonstrated gay men who experience muscular appearance concerns were more likely to engage in over-exercise behaviours in order to improve muscularity. Exposure to mainstream gay media was not associated significantly with obligatory exercise behaviours in our regression models. Other factors not assessed in this study (such as the desire to appear attractive in pursuit of sexual partners) might account for the drive to exercise to achieve an aesthetic muscular appearance.

Brown and Graham's (2008) findings suggest that gay men are less likely to enjoy the exercise process and concluded that gay men are likely striving to attain a thin physique through exercise because the gay ideal is leaner. The current results suggest that muscular concerns, rather than weight concerns, were most attributable to over-exercise. This conclusion is consistent with a gender-role definition of how a man should look (Cafri & Thompson, 2004; McCreary, Saucier, & Courtenay, 2005; Ricciardelli, Clow, & White, 2010; Strelan & Hargreaves, 2005) and building muscularity in response to internalised homophobia (Clarkson, 2006; Kimmel & Mahalik, 2005).

According to sociological research and postulations by authors, standards of appearance and muscularity within the gay community were a way to combat the AIDS epidemic which eroded muscle tone (Drummond, 2005; Klein, 1993; Shernoff, 2002). Body modification to increase muscle tone became a way to symbolise good physical health and associate it with sexual desirability. Results from this study suggest that sexually desirable muscular images within the gay community do not relate to muscle dissatisfaction or muscle development through exercise. This warrants further research with a more robust measure of gay media exposure. Muscular body image problems may be better explained by a combination of factors, which were not assessed, such as gender-role norms and internalised homophobia (Kimmel & Mahalik, 2005; Wiseman & Moradi, 2010). Adopting a muscular body is a strategy to blend in with mainstream heterosexual norms and reduce internalised homophobia and gender-role conflict (Blashill & Vander Wal, 2009; Clarkson, 2006; Kimmel & Mahalik, 2005). Although gender-role conflict and internalised homophobia may be apparent among gay men, studies have shown that gay men are

susceptible to other psychological risk factors such as mood problems (Bagley & Tremblay, 2000; Meyer, 2003).

Psychological Difficulties faced by Gay Men

The literature examining the psychological wellbeing of gay men indicates gay men are at higher risk of mood disturbance and are more likely to attempt suicide than heterosexual men (Bagley & Tremblay, 2000; Diaz, Ayala, Bein, Henne, & Marin, 2001; Fergusson, Horwood, & Beautrais, 1999; French, Story, Resick, Remafedi, & Blum, 1998; Hegna & Wichstrom, 2007; Lock & Steiner, 1999, Meyer, 2003; Safren & Heimberg, 1999; Willoughby, Lai, Doty, Mackey, & Malik, 2008). Gay men in this study were relatively well adjusted reporting mild depressive symptoms on average. One explanation for this is that the majority of the sample consisted of men from a higher socioeconomic status who are more likely to be educated. Studies have consistently demonstrated the positive relationship between socioeconomic status, education and improved rates of mental health (Adler et al., 1994; Wang, Schmitz, & Dewa, 2010; Zea, Reisen, & Poppen, 1999).

It could be speculated that involvement in the gay community may provide access to supportive peer relationships. The low rates of depression in the sample could relate to the level of social support in the gay community which can decrease the likelihood of mood problems in gay men (Zea, Reisen, & Poppen, 1999). The benefits from a supportive network may, therefore, have served as a protective factor reducing symptoms of depression by developing a sanctuary for a sexual minority who are otherwise considered at risk and stigmatised (Vincke & van Heeringen, 2004). Alternatively, gay men who are not depressed might be more able to engage with and be involved more fully with the gay community. Another explanation might be the older age of the current sample (with an average age of 35 years). For same-sex

attracted youth suicide attempts and depression are reported by almost one third and 54% of these cases occur during or recently after the 'coming out' process which often occurs in young adulthood (Hegna & Wichstrom, 2007). By virtue of the sample being older, participants may not have represented this 'at risk' period. Furthermore, the fact that most openly identified with being gay and consented to participate in a study about gay men's health behaviours, they may have had a higher level of acceptance and comfort with their sexuality.

The avoidance of stigma, internalised homophobia and the relationship between self-esteem and masculinity may be more influential in muscular body image dissatisfaction and exercise motivation than media messages presenting a physical ideal. These factors might help to explain why gay men score more highly on indices of muscular and weight concerns compared with heterosexual men (Beren, Hayden, Wilfley, & Grillo, 1996; Boisvert & Harrell, 2009; Hospers & Jansen, 2005; Kimmel & Mahalik, 2005; Peplau et al., 2009; Russell & Keel, 2002; Siever, 1994; Silberstein, Mishkind, Striegel-Moore, Timko, & Rodin, 1989) though the magnitude of the difference between gay and heterosexual men is small (Morrison, Morrison, & Sager, 2004).

Body image among gay men is likely complex and not simply attributable to homosexual orientation although this is often ignored within the literature (Boisvert & Harrell, 2009; Bosley, 2011; Carlat, Camargo, & Herzog, 1997; Feldman & Meyer, 2007; Herzog, Norman, Gordon, & Pepose 1984; Jones & Morgan, 2010; Siconolfi, Halkitis, Allomong, & Burton, 2009; Silberstein, Mishkind, Striegel-Moore, Timko, & Rodin, 1989; Strong, Williamson, Netemeyer, & Geer, 2000; Williamson & Hartley, 1998). This study examined whether gay related media rather than mere involvement in the gay community was associated with body image related concerns

and behaviours. An important finding was that gay media shared a small relationship with overweight preoccupation. Just as important was the finding that the aspect of gay media imagery assessed in this study was unrelated to muscular body image concerns suggesting it may be related to other factors. Results from this study indicate that the concern regarding bodyweight and muscular concerns are moderately associated.

Limitations

A number of limitations need to be addressed. Firstly, this study utilised a convenience sample of gay men. This may account for the well-adjusted sample as men who were distressed on any of the study variables might not be functioning well enough to participate. Although this non-probability sampling technique is not ideal, it has been noted by other authors that random sampling of members of the gay community is extremely difficult and the use of recruitment techniques via the internet has become standard practice to obtain adequate samples (Russell & Keel, 2002; Siever, 1994; Williamson & Hartley, 1998; Yager, Kurtzman, Landsverk, & Wiesmeier, 1988). Secondly, most participants were white middle class Australian, American, or European men. Therefore the results cannot be generalised to gay men from other cultures or ethnic groups. Thirdly, the psychometrics of the Exposure to Gay Media Questionnaire (EGMQ) were problematic. The development of a media scale is challenging because the various diverse types and forms of media do not necessarily correlate (i.e. written, and visual material, electronic and paper media). While the internal reliability of the EGMQ was adequate, the three item measure did not perform well in the EFA. It is possible that the EFA assessed two different constructs: one being the form of media exposure (i.e. television) while the second being the nature of the exposure (i.e. pornography). This may account for the

instability in the second factor. This is the first known study to use a gay media scale in structural equation modelling. Future research examining the role of the gay media and body image should aim to develop an exposure to gay media scale with better internal reliability and validity that can be compared across studies.

Gay men were identified in the study by reporting their sexual “preference”. There is a possibility that men with a high level of internalised homophobia may “prefer” women but have sexual relationships with men. Future studies may consider replacing the term “sexual preference” with “sexual orientation”. Finally, the study explored whether there was a differential effect of age on the relationship between the study variables. The sample size prohibited examining age across key age categories identified in the public health literature: youth, young adult, middle, and older age. Instead the median age was used to split the sample. While this is not an ideal approach, this division in age was an attempt to capture a critical period of *accelerated ageing* (Bennett & Thompson, 1991; Kelly, 1977, 1980) in which middle-age is considered to occur during the early 30’s by gay men. There is likely little difference in the variables of interest between a 30 year old and a 31 year old. A test of the mediating effect of age would be to assess specific age cohorts.

Strengths

Although acknowledging these limitations, the current study included a number of important strengths. It improved on the methodology of some prior research by recruiting a larger broadly representative sample of gay men in order to increase generalisability of the findings to gay men in the community and to increase power to detect effects. Many of the quantitative studies examining gay men’s body image and eating problems incorporate small sample sizes that may mask the magnitude of effects (Filiault & Drummond, 2010; Kane, 2010). The current study is

one of few that have included a sample of this size with many studies involving fewer than 100 gay men.

Bisexual men have been shown to differ in their experience of body image compared with gay men. Therefore, participants were only retained if they expressed a predominant homosexual orientation rather than the inclusion of bisexual, transgender or heterosexual men with same-sex tendencies. Subsequently, the results of this study are one of only a handful of studies that have focused on a predominantly homosexual population.

An important strength of this study was the inclusion of both weight and muscular paradigms which contribute to an overall understanding of male body image. Another strength of the study was the use of a reliable and validated measure of involvement in the gay community. Using this scale increases confidence in the accurate measurement of gay community participation.

Lastly, this is the first known study that has examined obligatory exercise among gay men. The results suggest that 12.5% of gay men in the sample were exercise dependent and that obligatory exercise shares a relationship with eating problems which is similar to findings in the heterosexual literature.

Clinical Implications

This study involves a number of important implications for the assessment and treatment of body image perception and related problematic behaviours in gay men. Similar to obsessive exercise behaviours observed in women with eating disorder profiles (Brehm & Steffen, 1998; Gapin & Petruzzello, 2011), the current results suggest that clinicians also need to be aware that gay men who are worried about their weight might also be prone to be the same problems. The findings show that some gay men with body image concerns might be vulnerable to a maladaptive pattern of

coping involving restricted eating and feelings of depression and pressure to exercise. Clinicians should be aware of this possibility when they are working with gay male clients who report body image concerns. Clinicians may be able to assist clients by exploring their motivation to exercise and provide psycho-education regarding the consequences of excessive exercise, while at the same time, screening for the presence of eating disturbance.

Greater involvement in the gay community is associated with lower levels of depression. Some gay clients may be victims of stigma and marginalisation within certain areas of mainstream society. Clinicians working with gay men may help them to reduce these feelings of isolation and depression by encouraging them to establish supportive peer networks. This might provide a socially cohesive and safe context in which clients can explore their gay identity.

Clinicians may also be mindful that sectors of the gay media depict an idealised body and appearance. Clients who express a desire to conform to a thin ideal perpetuated by the gay community media may benefit from deconstructing the sexualised depiction. Allowing the client to understand the process of ‘photoshopping’ (i.e. digitally enhancing the image) to intentionally reduce the body fat on gay models may help the client recognise that many of the images in the media are digitised, unrealistic and likely unattainable.

Future Research

This study provides a basis for further detailed and extensive research into the experience of body image among gay male populations. Currently, the majority of studies have examined body image and gay community participation only generally; there is a paucity of research examining gay community subcultures and whether men view their bodies and their identities differently as a result of various affiliations. For

example, various gay community subcultures with self-identified body types (i.e. Bears, Twinks; thin young men or teenagers, Circuit Partiers; men who attend all night rave functions and may engage in sexual intercourse, 'Muscle Boys'; well built young gay men, Goths/Emo's; those wearing black and often perceived as behaving effeminately) have been shown to vary in terms of susceptibility to health related risk factors including drug use, binge drinking, smoking, and unprotected sex (Willoughby, Lai, Doty, Mackey & Malik, 2008). Future research may begin to examine the breadth of gay community involvement and examine whether participation in different types of community activities (i.e. raves, dance parties, saunas, clubs, and bars) influence body image perception and behavioural outcomes in different ways.

Studies have shown that certain parts of the gay community are focused almost exclusively on appearance and the procurement of sexual gratification with attractive partners (Epel, Spanakos, Kasl-Godley, & Brownell, 1996) and that body image and appearance may be more vital in procuring sexual partners. It is likely that gay men participate within different gay sub-communities for a range of differing and various intents (i.e. social inclusion and support or sexual procurement). Gay men who participate in select gay community activities or attend night clubs/saunas for the procurement of a sexual partner may be more susceptible to body image disturbance along with other psychological difficulties as suggested by previous research (Flores, Mansergh, Marks, Guzman, & Colfax, 2009; Mattison, Ross, Wolfson, & Franklin, 2001; Ross, Mattison, & Franklin, 2003).

Because gay community involvement and peer relationships of gay men have not been thoroughly examined, little is known about the strength and quality of those relationships. The current study assessed items more related to social network size

and identification with the gay community. Future research may benefit from examining the quality of peer relationships within the gay community and how this influences body image and eating disorders. For example, poor peer relationships may influence higher levels of body image disturbance whereas more supportive relationships may decrease it. This may also account for the conflicting results found in studies that report significance between involvement in the gay community and body image dissatisfaction.

An aim of this study was to assess whether the predictors of obligatory exercise and restricted eating differed for younger and older gay men. Future research may examine the propensity of body image satisfaction, eating problems and exercise disorders for gay men over the course of the lifespan (i.e. adolescent, young adult, adult, middle-aged and elderly). Furthermore, the impact of the media on body image among different age groups could be assessed to see whether young adults are at greater risk as has been shown in the heterosexual male and female literature.

Men experiencing body image disturbance often exhibit symptoms of depression and attempt to modify their bodies in a number of ways; eating disorders and the use of performance enhancing substances such as steroids are used as to shape physique (Olivardia, Pope, Borowiecki, & Cohane, 2004; Parent & Moradi, 2011). Research has established that overexercise and muscular concerns are related to steroid use intention among heterosexual men to obtain a masculine appearance (Parent & Moradi, 2011). Because this study demonstrated a significant relationship between muscular concerns and obligatory exercise, research is needed to examine whether gay men are also at risk of performance enhancing substances to achieve a muscular appearance. Studies that compare gym active and non-gym active heterosexual and gay men in terms of their body image and health behaviours (e.g.

diet and substance use) may also reveal if gay men are at higher risk of unhealthy behaviours such as steroid use.

Studies have found that exercise is used as a form of body modification to increase appearance and is linked to eating disorder symptomatology in heterosexual men (Goldfield, Blouin, & Woodside, 2006; Strelan & Hargreaves, 2005). The relationship between eating concerns and obligatory exercise in this study has previously been established for heterosexual men (De Young & Anderson, 2009; Matheson & Crawford-Wright, 2000; O'Dea & Abraham, 2002; Olivardia, Pope, Borowiecki, & Cohane, 2004). O'Dea and Abraham's findings are similar to the proportion of gay men who scored above the cut-off for restricted eating and obligatory exercise in this study. Future research could compare gay and heterosexual men's exercise habits and body image to determine whether they are similar in the way they respond to body manipulation.

Muscular exercise advertising decreases self-efficacy in men in a similar manner to thin advertising for women (Berry & Howe, 2005). The current study did not examine exercise imagery as a predictor of obligatory exercise or muscular body image. Future research could investigate whether muscle specific media items are influential in the development of exercise problems than gay community media in general.

Conclusion

This study is part of a small but growing body of literature which challenges the conclusions drawn by some prior research (Boroughs & Thompson, 2002; Brown & Graham, 2008; Grogan, Connor, & Smithson, 2006; Hospers & Jansen, 2005; Siever, 1994) that body image disturbance and eating problems in gay men is attributable to gay community involvement and pressure.

Although the results from this study suggest that general involvement in the gay community is minimally or unrelated to restricted eating or obligatory exercise risk, a relationship exists between involvement in the gay community and exposure to gay media which depicts sexualised imagery.

In conclusion, the results suggest that involvement in the gay community, rather than being a harmful experience, might serve as a protective factor which reduces the risk of mood problems in gay men though the mechanisms of this effect are not clear. On the other hand, exposure to gay community media is primarily associated with some concerns about being fat. In the current sample, gay men's body image is related to their perceptions of both bodyweight and satisfaction with levels of muscle tone. These are related concepts and provide more insight into body image in men. The results suggest that higher levels of weight and muscle dissatisfaction are associated with increased levels of behaviours that can put gay men at risk for eating pathology and pathological exercise in order to conform to an idealised body. Clinicians treating gay men who report high levels of body concern should be mindful of the associations between disordered eating and compulsive exercise and encourage behaviour change while challenging the underlying beliefs about body image.

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Appendix A

Exposure to Gay Media Questionnaire

On how many days during the last month have you...

1. Read a book with gay and lesbian themes?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day
2. Watched a film or television series featuring gay characters?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day
3. Listened to a gay radio station?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day

4. Watched or viewed gay pornography?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day
5. Used an online gay site (e.g. Gaydar, Manhunt)?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day
6. Read a gay magazine or newspaper (e.g. Blue, DNA)?
 - a. No days
 - b. 1-5 days
 - c. 6-12 days
 - d. 13-20 days
 - e. 21-every day